Free-Energy Governance - Sensing, Sensemaking, and Strategic Renewal - Surprise-Minimization and Firm Survival

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Zug, February/December 2020 Daniel Bijan Khezri

Abstract

Problem Analysis

In a distributed and discontinuous world, continuous strategic renewal is a strategic imperative with firm survival rather than performance being the overriding concern. Initiating and sustaining strategic renewal represents new challenges with far-reaching consequences for *organizing* in terms of structure, cognition, and capabilities. Cognitive capabilities such as sensing and sensemaking rise in their complementary relevance to domain expertise and operational capabilities. The board of directors potentially represents a unique cognitive variable. Traditional conceptions of coupling governance and operational channels, environmental engagement, and board capabilities require a fresh perspective.

Research Gap

There is a need for a new strategic governance framework. The unit of analysis is the sustainability of continuous strategic renewal (and thus the prospects for firm survival) determined by the triplet of a firm's (1) structure (cognitive coupling of governance and operational channels in form of recognition density as a matter of top-down/bottom-up prediction-error-/surprise minimization), (2) cognition (the ability to enact rather than adapt to environment), and (3) dynamic board capabilities (duality management of exploitation/exploration and financial/strategic control).

Theory

Essentially, six core theoretical perspectives lay together the foundation for this new conversation: (1) *Upper Echelon View* (UEV); (2) *Attention-Based View* (ABV); (3) *Dynamic Capabilities View* (DCV); (4) *Enactivist Approach* (EA); (5) *Prediction Processing Framework* (PPF); and (6) *Antagonistic Neural Networks Perspective* (ANNP).

Method

The empirical study consists of a single case study concerning the digital transformation of Ringier AG ('Ringier'), one of Europe's oldest and leading media companies. A qualitative content analysis/sensemaking methodology guides the study of Upper Echelon interviews to reveal significance.

Contribution

A new logic of *organizing* is introduced: 'Free-Energy Governance' (FEG), providing a generative framework linking structure (hierarchy/recognition density), cognition (environmental engagement as enactment), and capabilities (duality management). Neuroscience's 'free-energy principle' (Friston, 2010) is transposed to strategic governance laying the basis for a new conversation. FEG provides both a new governance framework as well as a systematic approach to predict a firm's potential for entropy.

Zusammenfassung

'Free-Energy Governance' (FEG) wird als neue Logik für kontinuierliche strategische Unternehmenserneuerung vorgestellt. FEG verfolgt ein konkretes Ziel: die Minimierung von Überraschung ('surprise minimization'). Drei Dimensionen bestimmen dabei den Erfolg: (1) Hierarchie (Structure/Recognition Density), (2) Wahrnehmung (Cognition), und (3) Fähigkeiten (Dynamic Board Capabilities). Dem Verwaltungsrat kommt in dieser neuen Logik eine besondere (kognitive) Bedeutung zu. Anhand einer Fallstudie zur digitalen Transformation des Schweizer Medienkonzerns Ringier, wird FEG auf Basis einer qualitativen Inhaltsanalyse aussagekräftig angewandt.

1. Hierarchie (*Structure/Recognition Density*)
Die Führungsebene (Upper Echelon) arbeitet mit Modellen, die erklären wie die Welt, Märkte, und Technologien funktionieren/sich entwickeln (top-down prediction models/predictions). Die Qualität der Modelle wird bestimmt durch die von marktnahen Unternehmensmitgliedern (in der Regel in den unteren Stufen der Hierarchie) und von Marktteilnehmern (Partnern) generierte Intelligenz (bottom-up stimuli), die es der Führungsebene erlaubt, kontinuierlich die Modelle und deren Projektionen weiterzuentwickeln, um systematisch die (mathematische) Differenz zwischen Vorhersage und Realität zu minimieren. In diesem Zusammenhang stellt sich die Frage, wie Hierarchieebenen in sich und miteinander verknüpft sind ('recognition density') und welche konkrete Rolle der VR einnimmt, diese Prozesse sicherzustellen. Das setzt wiederum voraus, daß nicht unbedingt das strategische Ziel aber vor allem die 'Purpose' der Organisation definiert und so kommuniziert wird, daß es für alle Mitglieder ‘greifbar’ ist.

2. Wahrnehmung (*Cognition*)
Hier geht es vor allem um das Verhältnis des Unternehmens zu ihrer Umwelt. Unternehmen müssen Vertrauen in ihre eigenen Modelle entwickeln als Basis für 'hauseigene' Innovation. In einer dezentral verteilten und diskontinuierlichen Welt steigt der marginale Einfluss des einzelnen Marktteilnehmers (unabhängig von Unternehmensgrösse), Märkte mitzubestimmen und führt zu Unberechenbarkeit. Umwelt ist immer subjektive Erfahrung.

3. Fähigkeiten (Dynamic Board Capabilities)
Das Unternehmen ist zunehmend herausgefordert gewisse (nicht-operative) Meta-Fähigkeiten auf Board-Ebene (dynamic board capabilities) zu entwickeln. Eine solche entscheidende Fähigkeit ist, zum Beispiel, die Nachhaltigkeit des Gleichgewichts zwischen 'financial control' (Innovation durch M&A/Joint-Ventures) sowie ‘strategic control' (hauseigene Innovationen) langfristig zu sichern. Zu bestimmten Zeiten im Unternehmenslebenszyklus kann externe Innovation sehr entscheidend für die Zukunftssicherung sein. Schlägt das Pendel aber zu sehr in die 'externe' Richtung, verliert über die Zeit das Unternehmen seine eigene Innovations- und Überlebenskraft. Verkauf oder Fusion verbleiben dann oftmals als die einzigen Zukunftsoptionen.

Abbreviations

ABV	Attention Based View
AG	Aktiengesellschaft (Limited Company, Switzerland)
AI	Artificial Intelligence / Active Inference
ANNP	Antagonistic Neural Networks Perspective (ANNP)
Bn/bn	Billion
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CHF	Swiss Franc
DBK	Daniel Bijan Khezri
DC	Dynamic Capabilities
DCV	Dynamic Capabilities View
DMN	Default Mode Network
DNA	Deoxyribonucleic Acid
EA	Enactivist Approach
EC	Embodied Cognition
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EQT	PE investor
EUR	Euro
FEG	Free-Energy Governance
FEP	Free-Energy Principle
IPO	Initial Public Offering
KKR	Kohlberg Kravis Roberts & Co. (PE investor)
KPI(s)	Key Performance Indicators
M/m	Million
M&A	Mergers and Acquisitions
OKR	Objectives and Key Results
PE	Private Equity
PPF	Prediction Processing Framework

RAS	Ringier Axel Springer (Central and Eastern Europe only)
TCG	Traditional Corporate Governance
TMT	Top Management Team
TPN	Task Positive Network
UEV	Upper Echelon View
USD	US Dollar

Tables

1 Introduction

"***The FEP [free-energy principle]****is a mathematical formulation that explains, from first principles, the characteristics of biological systems that are able to resist decay and persist over time. It rests on the idea that all biological systems instantiate a hierarchical generative model of the world that implicitly minimises its internal entropy by minimising free energy. […]*
Living systems are effectively self-evidencing—they move to maximise the evidence of their existence. So how do they achieve this? […]
This is where the FEP comes in. It asserts that all biological systems maintain their integrity by actively reducing the disorder or dispersion (i.e., entropy) of their sensory and physiological states by minimising their variational free energy. […]
Markov blankets establish a conditional independence between internal and external states that renders the inside open to the outside, but only in a conditional sense (i.e., the internal states only 'see' the external states through the 'veil' of the Markov blanket). […]
With Markov blankets in mind, it is fairly straightforward to show that the internal states must—by virtue of minimising surprise—encode a probability distribution over the external states; namely, the causes of sensory impressions on the Markov blanket. This brings us back to free energy. Free energy is a functional (i.e., the function of a function) that describes the probability distribution encoded by the internal states of the Markov blanket. […]
In other words, free energy is a function of probabilistic beliefs, encoded by internal states about external states (i.e., expectations about the probable causes of sensory input). […]
This means that living systems can be characterised as minimising variational free energy, and therefore surprise, where the minimisation of variational free energy entails the optimisation of beliefs about things beyond or behind the Markov blanket. […]
It asserts that for a system to resist entropic erosion and maintain itself in a bounded set of states (i.e., to possess a generalised homeostasis), it must instantiate a causal, statistical model of its eco-niche relation. In other words, an organism does not just encode a model of the world, it is a model of the world".

(**Ramstead, Badcock and Friston, 2018: 2-5**; emphasis by DBK)

1.1 Problem analysis

"Problem formulation is often the first – and most important – task of the engaged scholarship process. Problem formulation plays a crucial role in grounding the subject or problem in reality, and directly affects how theory building, research design, and problem solving tasks are performed." (Van de Ven, 2007: 71)

1.1.1 Framing the conversation and formulating the problem

Scholarship is best understood as conversation. Conversation "occurs most of all via the written world" (Huff, 1999: 5). There are many conversations - past and present, cross-fertilizing or merging into one another - relevant to the inter-disciplinary subject-matter of this dissertation: *what form of hierarchical coupling (**structure**), firm environmental engagement (**cognition**), and board **capabilities** determine the success of continuous strategic renewal and, hence, firm survival.*

Twenty or thirty years in strategic management research is not a long period of time. But a framework's consistent persistency across several conversations, not least as a meaningful metaphor [1], has been shaping the study of strategy research. '*Ambidexterity*'[2]', '*attention*'[3], '*cognitive dissonance*'[4], '*contingency*'[5], '*double-loop learning*'[6], '*dynamic capabilities*'[7], '*enactment*'[8], '*information*

[1] See Cornelissen, J.P. and Kafouros, M. (2008. **The emergent organization: primary and complex metaphors in theorizing about organizations**. Organization Studies, 29: 957-978) highlighting "the origins and evolving nature of metaphorical thinking about organizations" (p.957). Morgan (2006: 5; emphasis by DBK) notes: "**Metaphor is inherently paradoxical. It can create powerful insights that also become distortions, as a way of seeing created through a metaphor becomes a way of *not* seeing**… In recognizing **theory as metaphor**, we quickly appreciate that no single theory will ever give us a perfect or all-purpose point of view."

[2] O'Reilly and Tushman, 2008

[3] Ocasio, 1997; 2011

[4] Festinger, L. 1957. **A theory of cognitive dissonance**. Evanston, IL: Row, Peterson.

[5] Lawrence, P.R. and Lorsch, J.W. 1967. **Organization and environment: managing differentiation and integration**. Boston: Graduate School of Business Administration. Harvard University

[6] Argyris, 1976

[7] Teece et al., 1997; Eisenhardt and Martin, 2000; Helfat et al., 2007; Teece, 2007

[8] Daft and Weick, 1984

processing' [9] ,'*microfoundations*' [10] , '*sensemaking*' [11] , and '*Upper Echelon*' [12] , for example, are defined concepts, frameworks, lenses or part-theories that have framed conversations inspiring this dissertation.

Environmental complexity and dynamism have been dominant moderators in strategy and governance research. Indeed, while time has no speed, the rate of change has not only been accelerating but the underlying structure of change has become increasingly distributed and discontinuous[13]: 'sense of urgency' as well as 'heedful interrelating' (Weick and Roberts, 1993) are increasingly relevant concepts in a world that is now commonly perceived as 'full-of-surprises' or uncertain[14].

"It is exceedingly difficult to say something meaningful about the real world without starting in the real world. Observation and description of the real world are the essential points of origin for theories in applied areas." (Dubin, 1976: 18)[15]

Beneath this explicate 'world order' characterized by so-called growing uncertainty and unpredictability, however, there is an implicate order[16] determined by essentially two mutually reinforcing advances: (1) accelerating dis-intermediation and decentralization powered by all-pervading connectivity; and (2) exponential growth in artificial intelligence (AI) and specifically predictive analytics and machine and deep learning

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9 Galbraith, 1974

10 Gavetti, 2005; Barney, J. and Felin, T. 2013. **What are microfoundations?** Academy of Management Perspectives, 27: 138–155; Helfat et al., 2015

11 Weick, 1995

12 Hambrick and Mason, 1984

13 See Hitt (2000) on **the impermanence of success**: "The competitive landscape of the new millennium will be characterized by substantial and discontinuous change. It will be rugged and large. Multiple **strategic discontinuities will occur and the changes will be rapid.** In other words, the periods of stability will be short. The substantial change in and the size and complexity of this landscape produce **significant uncertainty**." (p.7) "The watchword in the new millennium is **continuous transformation through the creation and application of new knowledge**." (p. 16); Hitt, M.A. 2000. The new frontier: transformation of management for the new millennium. Organizational Dynamics, 28: 6–17; emphasis by DBK)

14 "**Uncertainty is a personal matter; it is not *the* uncertainty but *your* uncertainty**." (Lindley, 2014: 1; emphasis by DBK)

15 Dubin, R. 1976. **Theory building in applied area**. In Dunnette, M. (ed.), Handbook of Industrial and Organizational Psychology. Chicago: Rand McNally (quoted in Ven de Ven, 2007: 71)

16 "Beneath each explicate order lie implicate order […] Movements that at one layer appear to be random at another will be found to have a complex, unfolding order." (Briggs, J.P. and Peat, F.D. 1984. Looking glass universe: the emerging science of wholeness. New York: Simon & Schuster: 120-121)

that is fueled by an equally exponential growth in cheap and distributed computing power capturing and processing more and more (big) data.[17]

As a result of those advances, the marginal cost of innovation and prediction-generation is continuously decreasing. This trend, reinforced by utility-based pricing models for computing and predictive power (Siebel, 2019: 60) is setting free more and more resources for operating expenses that have been traditionally (and, in retrospect, rather inefficiently) deployed as capital investment.

The increasing open source, distributed, and disintermediating nature of information technologies is challenging entrenched business models as well as logics of organizing.[18] That's "why the companies that will succeed are those that not only transform a business process, or a department, but also look at **wholesale digital reinvention**." (Siebel, 2019: 22; emphasis by DBK) The 'problem' is that neither predominant logics of organizing nor existing corporate governance models are a match for 'wholesale digital reinvention' and continuous strategic renewal. The organization[19]

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[17] "As we power into the 21st century, it is clear to me that the trends identified by Daniel Bell [*The Coming of the Post-Industrial Society; New York: Basic Books, 1973*] are accelerating. We are seeing a new convergence of technology vectors including elastic cloud computing, big data, artificial intelligence, and the internet of things, the confluence of which enables us to address classes of applications that were inconceivable even 25 years ago. We can now develop **prediction engines**. **This is what digital transformation is all about**. This is when the fun starts." (Siebel, 2019: Preface xxiii; emphasis by DBK)

[18] **In "a networked economy, the nature of strategy, value creation, and competitive advantage change from incremental to exponential**. Companies like Google, Uber, Airbnb, and Facebook focus on how to remove limits rather than set them. They look beyond controlling the pipe that delivers a product and instead build platforms that enable others to create value. They look to **create network effects through ecosystems of customers, suppliers, and partners**." (Mark Bonchek, 'Why the problem with learning is unlearning', Harvard Business Review, November 2016: 2-4; emphasis by DBK)

[19] "In fact, **the very model of a corporation that has inspired the debate on theory of the firm** and, indirectly, informed the theoretical debate in corporate finance is changing, and many of the conclusions we took for granted **need to be reexamined**. (Zingales, 2000: 1640-41; emphasis by DBK) "There are **four main features of the traditional firm** that are relevant from our point of view. First, the traditional firm, which according to Chandler (1990) emerged during the second industrial revolution to exploit economies of scale and scope, was **very asset intensive and highly vertically integrated**." (Zingales, 2000: 1641) "Second, the traditional firm had a **high degree of control over its employees**… Third, the **size and the asset intensity of the traditional firm required more investment** and more risk taking than were within the capacity of the management. The control conferred by the ownership of crucial assets, however, made outside ownership feasible. Therefore, the traditional firm came to be owned by disperse investors… Finally, the concentration of power at the top of the organizational pyramid, together with the **separation between ownership and control, made the agency problem between top managers and shareholders the problem**. Both capital structure and corporate governance became singly focused on this dimension… In the last decade we have witnessed three major changes in the balance of power within firms. First, **physical assets, which used to be the major source of rents, have become less unique and are not commanding large rents anymore**. Improvements in capital markets, which have made it easier to finance expensive assets, have certainly contributed to this change, as has the drop in communication costs, which reduced the importance of expensive distribution channels, which

– or more appropriately, *organizing*[20] - is challenged: centralized top-down strategy processes are rather anti-clocked unless dynamically and generatively intertwined in real-time with bottom-up stimuli and data emanating from field operations. In fact, akin to the AI evolution from a rules-based to a deep learning logic, **corporate governance is challenged to evolve from a supervised and rules/reinforcement-based learning system to a system of unsupervised (un)learning centered around top-down predictions that are challenged by bottom-up stimuli**.

Therefore, the board's purpose, structural/organizational embeddedness, and capabilities-mix can no longer be treated as given but must be reconsidered. Cognitive capabilities such as sensing and sensemaking will rise in importance relative to domain expertise as governance is increasingly organizational and less corporate. If not, the board's strategic relevance will be fading in a world where firm survival rather than firm performance is becoming the dominant concern.

> *"The evidence suggests that we are in the midst of an evolutionary punctuation: We are witnessing a* ***mass extinction in the corporate world*** *in the early decades of the 21st century. Since 2000, 52% of the Fortune 500 companies have either been acquired, merged, or have declared bankruptcy. It is estimated that* ***40 percent of the companies in existence today will shutter their operations in the next 10 years****…Merely following the trends of change is not enough. Just like organisms facing the Great Oxidation Event,* ***organizations need to reinvent the way they interact with the changing world****." (Siebel, 2019: 8; emphasis by DBK)*

The top-down 'hierarchical disconnect' so characteristic of traditional corporate governance[21] and strategy processes is more likely to put the firm at a competitive disadvantage. Indeed, "we are leaving the age of organized organizations and moving into an era where the ability to understand, facilitate, and encourage processes of self-organization will become a key competence." (Morgan, 1993: Introduction) Top-

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favors the access to the market of newly formed companies….Thus, **the quest for more innovation increases the importance of human capital**. At the very time **human capital has become more important**, firms' grip on it weakened… making employees' human capital less specific to their current employer. At the same time, the increased competition at the intermediate goods level has also triggered the breakdown of the vertically integrated firm…" (Zingales, 2000: 1642-43)

[20] See Scott and Davis (2007)

[21] Traditional corporate governance (TCG) is rooted in the logic of the 'rational system model', which emphasizes hierarchy and formalization. In contrast, 'natural' as well as 'open system' model "stress the advantages of informal structures, particularly in the face of task uncertainty. These alternative approaches…rely primarily on…informal structures to confront high levels of uncertainty and complexity." (Scott and Davis, 2007: 144)

down/bottom-up connectivity is increasingly less formal and more continuously iterative, cross-boundary, and, above all, generative: it is ‘a generative social field’ (Scharmer, 2018), which is not confined to the boundaries of the firm.

The boundaries[22] between organization and environment are more and more fluid or non-existent. Environment and environmental change cannot be treated as exogenously constituted. **Strategic renewal research is now confronted with important structural, cognitive, and process design challenges**. Sensing and sensemaking of relevant signals to initiate strategic renewal is less a matter of co-aligning organization with environment in form of adaptation (Huff et al., 1992) but co-creation as firms build agility through distinctive environmental enactment (Weick, 1995; Agarwal and Helfat, 2009; Schmitt et al., 2016).

Consequently, strategic renewal is not so much an isolated event but a continuous and cross-hierarchically generative social process that is increasingly integral to *organizing*; i.e. structure and cognition are intertwined (Ocasio, 1997; Gavetti, 2005[23]). Indeed, for that matter, we must question the firm’s (‘logical’) compartmentalization into exploitation and exploration, as recommended by the ambidexterity school (O’Reilly and Tushman, 2008).

Today’s challenge is ‘re-designing the plane while flying it.’ More importantly, we cannot continue building prediction models generating performance-determining predictions at the top without those being challenged in real-time by bottom-up stimuli and data. This presupposes an integrated cross-hierarchical framework. Further, there is a need to redefine what precisely is the top, i.e. Upper Echelon. **Top-down/bottom connectivity is of relevance within each and every horizontal layer.**

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[22] “Many investigators define boundaries of an organization by focusing on its actors – for example, attempting to determine who is and who is not regarded as a member…A widely used behavioral indicator of relatedness is frequency of interaction. Although no social unit is completely separated from its environment on the basis of this criterion... A third possibility is to focus on the nature of the activities performed”. (Scott and Davis, 2007: 153) “[According to Pfeffer and Salancik,] organizational boundaries are coterminous with activity control”. (Scott and Davis, 2007: 154) “**The organization ends where its discretion ends and another’s begins**.” (Pfeffer, J. and Salancik, G.R. 1978. The external control of organizations: a resource dependence perspective. New York: Harper & Row; p. 32; emphasis by DBK)

[23]“In focusing on hierarchy, a central premise of Simon’s Administrative Behavior (1976, see especially his discussion on pp. xxi and xxii) was that in studies of organizational decision making, questions about organizational structure cannot be decoupled from an understanding of individual executives’ behavior and cognition.” (Gavetti, 2005: 614)

Strategic renewal research has myopically focused on senior executive leadership but too often sidelining middle-management, field operations, as well as the board of directors. Of course, there are notable exceptions: Forbes and Milliken (1999) and Rindova (1999) concerning the board of directors and Floyd and Lane (2000) with regard to middle management, for example.

In particular the board of directors and, for that matter, *organizing*, are challenged: What is the board's relevance/role in strategy process, if any, in a distributed and discontinuous world? Can the board possibly fulfil its very basic 'monitoring function' in a fast-paced discontinuous world without being an integral part of a generative top-down/bottom-up strategy process? But the question is not just one of the board of directors' relevance to firm-performance, but more importantly, the board's very ability to make a difference to firm survival? What organizational design and which specific capabilities can empower the board to impact sustainable and continuous strategic renewal and therefore firm survival in a discontinuous world?

The very initiation of strategic renewal cannot 'remain' confined to CEO-inspired 'dominant logics' but should be the product of a continuous, cross-hierarchical (top-down/bottom-up) and generative sensing and sensemaking process. In particular, against the background of linking structure and cognition, this dissertation proposes to define and operationalize sensing and sensemaking as dynamic board capabilities beyond the 'sensing/seizing/resource-recombination' dimension as postulated by the Dynamics Capabilities View (Teece et al., 1997; Teece, 2007; Helfat, 2007).

In a discontinuous world, we are moving from a 'hard' to a 'soft' operating logic where fluidity and agility ('vacillation'/'balancing', 'duality'), informal(ity)[24] structures (Gulati and Puranam, 2009), and the ability to enact environment are increasingly determining firm performance and survival. Concerning the board's strategic role and specific capabilities, the following questions are worth considering:

(1) Given the board's extraordinary position and characteristics within an organization, in particular in terms of cognitive distance to exploitation and cognitive variety in composition, *WHAT factors determine the board's ability to be more prominently leveraged in strategy initiation and formulation to*

[24] "In sum, natural system analysts insist that **highly centralized and formalized structures are doomed to be ineffective and irrational in that they waste the organization's most precious resource: the intelligence and initiative of its participants**." (Scott and Davis, 2007: 64; emphasis by DBK) "More generally, whereas the rational system model stresses the normative structure of organizations, the natural system model places great emphasis on the behavioral structure." (Scott and Davis, 2007: 83)

effectively and continuously impact strategic renewal and firm survival (with strategy implementation/execution, of course, being the exclusive domain of executive leadership)?

(2) Assuming that in a discontinuous and distributed world, firm performance and survival are increasingly determined by cognitive capabilities such as generative sensing and sensemaking: *WHAT are the implications for strategy process as well as organizational design, specifically concerning the role of the board of directors and its 'loose coupling' (Orton and Weick, 1990) with the rest of the organization (Ocasio and Joseph, 2005)?*

(3) Indeed, if the focus is on cognition, we are challenged to explain WHAT the drivers are that trans-morph the many individual perceptions at different hierarchical levels into organizational cognition or 'shared meaning' (Weick, 1995). The pertaining question is: *WHAT determines that "the organization comes to be constituted as an actor with a point of view and identity that transcend that of any of its members, singly" (Taylor and Van Every, 2000: 244) WHAT organizational and governance design, purpose, as well as specific cognitive capabilities underpin the ability to enact performance- and survival-enhancing strategic renewal pathways? In fact, is there an 'organizational map' (Taylor and Van Every: 283-284) that underlies strategic renewal, beyond the control of any single leader or organizational layer? Is there a cognitive map that underlies firm performance and survival?*[25]

(4) Assuming that the sensory attention to non-salient or transitory environmental stimuli is decreasing from the organization's bottom towards its Upper Echelon, *WHAT structure, cognition, and capabilities determine for bottom-up stimuli (data) to dynamically connect to top-down decision processes (schema, predictions, and prediction models) so that seemingly marginal data points are 'empowered' to provide relevant insights? WHAT specific contribution, complementary to that of top-management-team (TMT), can the board of directors make in this ('loose') coupling process?*

(5) The respective neural networks responsible for (task-positive, TPN) exploitation and (default-mode, DMN) exploration are antagonistic and cannot be activated simultaneously (Boyatzis et al., 2014). In terms of organizational design, the question then arises: *Do exploitation and exploration, while asynchronous or neurologically antagonistic, form a duality that should not be formally and*

[25] Crossan et al.'s (1999) 4I model of organizational learning - consisting of four micro-processes linking three levels of analysis - serves as a theoretical framework: "**Intuiting** and **interpreting** occur at the individual level; interpreting and **integrating** happen at the group level; and integrating and **institutionalizing** take place at the organizational level." (Crossan and Berdrow, 2003: 1090; emphasis by DBK)

structurally separated (as the ambidexterity school suggests; O'Reilly and Tushman, 2008), but loose (informal) organizational structures and processes should facilitate a form of real time TPN/DMN 'switching' where the (DMN-centric) board assumes a critical role in dynamically 'co-directing' and monitoring vacillation of exploitation and exploration across the organization, for example?

(6) If the default-mode sensemaking of bottom-up signals is a critical cognitive capability underpinning strategic renewal, *is the board of directors - rather than TMT - uniquely positioned in developing and exercising such a capability, in particular since the board should be assumed to be less trapped in a firm's dominant logics (Prahalad and Bettis, 1986), core rigidities (Leonard-Barton, 1992), and task-positive frames of exploitation? And WHAT organizational structures and processes foster the advancement and deployment of such cognitive capabilities at the board level?*

These are stimulating questions of practical relevance revolving around the board's role in initiating, co-creating, and co-directing strategic renewal to positively impact firm performance and survival. Most 'strategy' conversations, however, have either marginalized or completely ignored the strategic role of the board of directors and, consequently, have not satisfactorily linked top-down predictions generated by Upper Echelon with bottom-up field intelligence (close to resource markets, i.e., clients, products, and technologies).[26]

The 'free-energy principle' provides the basis for further developing existing conversations and developing a cross-hierarchical framework that is guided by one single and simple principle: *surprise-/prediction-error-minimization*. Dynamic board capabilities as well as the organizational design (structure and process) relevant to fertilize an organizational orientation towards strategic renewal are developed. Conversations in strategic cognition, corporate governance, and neuroscience are linked. The Carnegie School's "triplet of routines, cognition, and hierarchy" that Gavetti (2005: 599) is referring to is developed and advanced in this dissertation as **the triplet of structure, cognition, and capabilities**, linked in circular causality.

[26] Notable exceptions concerning the board's role in strategic renewal are Haggerty, 1967; Goodstein and Boeker, 1991; Golden and Zajac, 2001; and Westphal and Fredrickson, 2001. Those studies attribute significance to the board's impact on initiating strategic renewal. See also Denis, Lamothe, and Langley (2001) who define strategic leadership as a collective phenomenon: "Following Hodgson, Levinson, and Zaleznik (1965), we use the term '**leadership role constellation**' [rather than 'top management team') to refer to the collective leadership group." (Denis, Lamothe, and Langley, 2001: 811; emphasis by DBK] Floyd and Lane (2010) give significance to the role of middle management in strategic renewal.

In summary, the problem analysis is threefold:

- While pace of change in terms of high velocity has been a constant feature of the globalized world, environment has been increasingly moving to **a distributed and discontinuous structure**. Continuous strategic renewal is the new '*organizing'* norm. Initiating strategic renewal within 'centralized organizational structures' for a distributed world, however, challenges entrenched models of *organizing*. "**The changing nature of the firm forces us to abandon the illusion that firms' boundaries are clear cut** and remain unchanged when we change the capital structure or the governance structure. This was a sensible assumption for a GM [General Motors] type of organization - very physical-asset intensive, where the boundaries were clearly set in advance and not easy to alter - but is not very sensible for today's organizations, which are mostly human capital intensive." (Zingales, 2000: 1643)[27] Indeed, 'next-generation corporate governance' must not only encompass the entire firm but its ecosystems. "In the current environment, where human capital is crucial and contracts are highly incomplete, the **primary goal of a corporate governance system should be to protect the integrity of the firm**, and new precepts need to be worked out". (Zingales, 2000: 1644-45; emphasis by DBK)[28] Effectively, attention is distributed (Ocasio, 1997). In a discontinuous and distributed world, strategy process requires an integrative and cross-hierarchical framework: neither can the potentially essential strategic role of the board of directors be ignored, nor should the field-level's proximity to resource markets be disregarded as a critical pillar of strategy process. "**There is room for a fresh perspective on how organizational structures, processes and systems should be designed to enable both induced [top-down] and autonomous [bottom-up] renewal initiatives**." (Schmitt et al., 2018: 90-91; emphasis by DBK)
- Against this background, we must turn towards capabilities and question whether traditional capabilities centered around information-processing and domain expertise (Dane, 2010; Almondoz and Tilcsik, 2016) are sufficiently

[27] "Employees' human capital has become the most valuable asset, and growth options are up for grabs, answering these questions becomes unavoidable. After all, **what defines corporate finance is its focus on the challenges raised by financing the unique combination of assets and people** that we call firms. Understanding what makes this combination unique is a fundamental step we cannot postpone any longer." (Zingales, 2000: 1643; emphasis by DBK)

[28] "One of the shortcomings of the existing theories of the firm is their inability to explain **why temporary shocks to liquidity can have permanent, and sometimes irreversible, consequences on a firm's value**. If we can show that liquidity shocks alter in an irreversible way the factors responsible for growth, then we would have a new theory of the costs of financial distress and consequently a new capital structure theory." (Zingales, 2000: 1644; emphasis by DBK)

adequate to enhancing a firm's competitiveness. **Cognitive capabilities such as sensing and sensemaking - as a basis for resource-recombination - gain in importance** as the challenge is not so much a matter of analyzing and adapting to a changing environment but to (1) enact environment through purpose-directed framing and action-centric engagement with the world and (2) embrace exploitation vs. exploration as well as strategic vs. financial control (i.e., a firm's capacity for internal vs. external innovation/strategic renewal) as a challenge of duality[29]. **'**WHAT determines that a firm can most effectively attend to, sense, and act upon relevant signals?' or 'WHAT determines that a firm reveals relevant 'significance' in the environment? These are critical questions. The organization's strategy focus is increasingly moving from the content dimension to the process (or 'becoming') dimension. **Conceiving organization, i.e., *organizing*, as a system of expectations and interpretations** (Daft and Weick, 1984) is essential to embracing environment as 'shared expectation' and 'shared meaning' to be acted upon (or to be enacted) rather than an objective reality to analytically adapt to. Cognitive capabilities suitably serve as a match to a discontinuous and distributed world. Without such cognitive capabilities, executive leadership as well as the board of directors will be rather incapacitated, as uncertainty and disruption will not only dominate perception and predictions, but trap sensemaking. Consequently, the very ability to strategically and continuously renew the business will be compromised. 'Free-energy principle's' **surprise-/prediction-error-minimization will guide the triplet-design of hierarchy, cognition, and capabilities as a basis for generatively optimizing firm performance and survival.**

- As cognitive capabilities rise in their complementary relevance to operational capabilities and domain expertise, the question arises whether

[29] "The four configurations delineating the duality of exploratory and exploitative strategic orientations are: **1) discrete and mutually exclusive choices** (Duncan, 1976); **2) orthogonal capabilities to be developed simultaneously** (Gibson & Birkinshaw, 2004); **3) the endpoints of a continuum** (Tushman & Romanelli, 1985), and **4) complementary** - enabling and interdependent dimensions which are constantly reinforcing each other (Farjoun, 2010)". (Rillo, M. 2016. Strategy making during ambidexterity cycles. Dissertation. University of Gallen; p. 11; emphasis by DBK)
"Zollo and Winter (2002) suggested a relevant typology for the continuum wherein exploitation primes exploration and vice versa. Instead of a trade-off between exploration and exploitation processes, there is a recursive and co-evolutionary relationship between them. Ultimately, the notion of the complementarity of exploration and exploitation via their reinforcing loop also suggests that **cyclical ambidexterity** is a layer of the other forms of ambidexterity and implies that the cyclical nature is a combination of the above forms" … [Farjoun (2010) argued] that **the reliability of stable systems increases through variability**, that is, by introducing **"moderate" exploitation that uses the tools of exploration** … [and] **"moderate" exploration, which uses tools of exploitation**". (Rillo, 2016: 12; emphasis by DBK)

the **board represents a unique cognitive variable in strategy process** and whether the traditional coupling of governance and operational channels (Ocasio and Joseph, 2005) requires a fresh perspective. Predominant traditional corporate governance conceptions (see Table 2; p. 125) in practice as well as in scholarly research have been distancing the board from strategy process since the non-executive board is viewed as: (1) an independent monitoring ('financial control') body on behalf of shareholders and other stakeholders that has to avoid conflicts of interests, and (2) consequently, is not qualified to initiate strategic renewal. Referring to Hitt et al. (1996) and their proposed dichotomy of 'strategic vs. financial control', the question arises whether sustainable firm performance and survival are dependent on not losing (bottom-up) 'strategic control' and whether the board of directors is uniquely positioned to 'govern' the balance between top-down 'financial control' (i.e., reliance on M&A and joint-ventures for strategic renewal) and strategic control (i.e., in-house-generated innovation) **to avoid the '*financial control trap*'**. For the board to assume a relevant role in balancing the emphasis of either 'strategic' or 'financial' control at any given point in time of a firm's lifecycle, for example, the question arises **WHAT structural ('coupling') design determines that the board can reach 'beyond the board-table' to connect to the firm's bottom (product, client, and other resource markets) and WHAT specific cognitive capabilities uniquely underpin that ability for balancing strategic vs. financial control**, for example. The organizational design considerations that arise in this context are putting into new perspective how structure, cognition, and capabilities are dynamically related. In particular, the concept of ambidexterity – the firm's ability to simultaneously engage in exploitation and exploration activities – highlights a potential tension between structure and cognition. Indeed, in a discontinuous world, structural compartmentalization may reach its limits, and cognitive 'vacillation' (Boumgarden et al., 2012) gains in traction. Formal re-organizations may be a relic of the past – they are too time- and resource-consuming, effectively compromising the effectiveness and sustainability of continuous strategic renewal. **Vacillation (i.e., cognitive agility) rather than ambidexterity (i.e. structural compartmentalization) appears to be the more relevant dynamic capability (O'Reilly and Tushman, 2008) in a distributed and discontinuous world.** More importantly, if the board represents a unique cognitive variable, it must assume a critical role in defining a firm's purpose[30] and goals. As environmental enactment rather than adaptation lays the foundation for firm performance, the firm's purpose- and goal-setting function becomes paramount.

This dissertation is dedicated to firm survival in an increasingly discontinuous and distributed world with the unit of analysis being the sustainability of continuous strategic renewal determined by the triplet of a firm's (1) structure (coupling governance and operational channels as a matter of top-down/bottom-up prediction-error-minimization; recognition density), (2) cognition (environmental enactment), and (3) dynamic board capabilities (duality management of exploitation/ exploration and financial/strategic control).

Structure, cognition, and capabilities are inseparably linked in circular causality.

[30] "**Purpose - not strategy - is the reason an organization exists**. Its definition and articulation must be top management's first responsibility." (Bartlett, C. and Goshal, S. 1994. **Changing the role of top management: beyond strategy to purpose.** Harvard Business Review; p. 88; emphasis by DBK) Unfortunately, the board's role in this context is consistently ignored.

1.1.2 Research gap: a cross-hierarchical framework for strategic renewal

The board of directors is a unique and integral part of a firm's Upper Echelon.[31] It acts from within and without the firm as a boundary-spanner and encapsulates strategy process's constructive tension between organization and environment, exploitation and exploration, and financial and strategic control. The board's role and power vary in particular in terms of laws, governance orientation, and management culture. In most leading capital markets jurisdictions, public policy or 'best practices' have advocated a rather sterile and independence-centric approach to corporate governance, distancing the board from initiating and directing strategic renewal.

Switzerland is one of the few exceptions where the law imposes upon the board of directors a strategic direction-setting responsibility[32]. Therefore, the board of directors in Switzerland assumes a central role in initiating and directing strategy. However, neither strategy process nor corporate governance research have developed a coherent conversation around studying the board's distinct cognitive contribution to setting strategic goals and initiating strategic renewal as an integral part to a top-down/bottom-up generative sensing and sensemaking process.

> *"Research efforts have suffered from several deficiencies: the lack of an overarching theoretical perspective, reliance on proxies for the strategy role rather than a direct measure of it and the lack of quantitative data linking this role to firm financial performance." (Hendry and Kiel, 2004: 500)* [33]

In the following, the research gap is crystallized by **reviewing and relating research in the fields of strategic cognition, corporate governance, and neuroscience**.

[31] While the Upper Echelon View (UEV) has rather ignored the role of the board, this dissertation explicitly includes the board as part of the Upper Echelon. "Managerial hegemony theory (Mace, 1971; Vance, 1983; Lorsch and MacIver, 1989) argues that **boards are a legal fiction dominated by management**." (Hendry and Kiel, 2004: 502; emphasis by DBK) Golden and Zajac (2001) provide a good bibliographical overview of the 'active vs. passive board' debate. "Most of the recommendations emerging from this **corporate governance debate tend to revolve around changes in board structure**, such as increasing the proportion of outside directors, that are aimed at increasing the independence of board decision making." (Golden and Zajac, 2001: 1088; emphasis by DBK)

[32] Bundesgesetz betreffend die Ergänzung des Schweizerischen Zivilgesetzbuches (Fünfter Teil: Obligationenrecht) vom 30. März 1911 (Stand: 1. Januar 2020); Art. 716aIII. Aufgaben / 2. Unübertragbare Aufgaben; 1. die Oberleitung der Gesellschaft und die Erteilung der nötigen Weisungen; Unter Oberleitung wird als **Festlegung der strategischen Ziele** hergeleitet.

[33] In fact, there is neither theoretical consensus nor empirical insight into how boards of directors contribute to strategy (for an overview, see Pugliese et al., 2009).

Strategic cognition, tracing its very origins to the Carnegie School's behavioral decision theory[34] (March and Simon, 1958; Cyert and March, 1963)[35] "as a complement to the rational analytical models" (Narayanan et al., 2011: 306) has emerged as a distinct and growing field. In particular, strategy initiation and formulation, defined "as a complex activity consisting of scanning, sensemaking, and (strategic) decision making" (Narayanan et al., 2011: 309-10), has progressively integrated the organizational and managerial levels (Eggers and Kaplan, 2013; Helfat and Peteraf, 2015) into a firm's collective interpretative power (Crossan et al., 1999; Gavetti and Warglien, 2005) emphasizing as core capabilities the timely and accurate analysis (sensing and sensemaking) of environment and, more importantly, environmental change.

Within the strategic cognition perspective, strategic renewal is essentially defined as a "process modifying or replacing a firm's current business model" (Schmitt et al, 2016: 362) while emphasizing "a role for dynamic capabilities through modification of the organization's resource base" (Agarwal and Helfat, 2009: 283), effectively linking "environmental change to corporate strategy" (Barr, Stimpert, and Huff, 1992: 15). Environment and environmental change are generally and quite consistently treated as exogenously determined, challenging leadership to continuously co-align firm and environment.

Contrary to this rather commonly accepted view underlying strategic management research, this dissertation is built upon the premise that firms (as is true for the individual) are the very creators of their respective reality through social inter-action. Reality is a social (action-based) construction (Berger and Luckmann, 1966), that can be influenced, shaped, and partly controlled. The firm determines, which parts of the environment should be revealed as 'significant' at any point in time. However, the triplet of structure (hierarchy), cognition, and capabilities to empower such 'significance-revealing' as 'shared meaning' as well as the ability to timely act upon it, remain a black-box in both strategic management as well as corporate governance research.

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[34] Cyert, R. M. and March, J. G. 1963. **A behavioral theory of the firm**. Englewood Cliffs, NJ. Prentice-Hall; March, J.G. and Simon, H.A. 1958. **Organizations**. New York: Wiley

[35] "A useful starting point in a discussion of cognitive processes is the **concept of cognitive simplification**. Simon (1957, 1976) laid the groundwork for the treatment of cognitive simplification in his discussion of 'bounded rationality' which suggests that decision-makers must construct simplified mental models when dealing with complex problems." (Schwenk, 1988: 42; emphasis by DBK) Effectively, one can embrace **Free-Energy Governance's generative model of top-down/bottom-up prediction-error minimization as a 'concept of cognitive simplification' in the face of discontinuity**.

In particular, Weick (1969, 1977) but also Smircich and Stubbart (1985) were critical to developing the 'en-acted environment' perspective in the field of management science: "Organization members actively form (enact) their environments through their social interaction. A pattern of enactment establishes the foundation of organizational reality, and in turn has effects in shaping future enactments. The task of strategic management in this view is organization making — to create and maintain systems of shared meaning that facilitate organized action." (Smircich and Stubbart, 1985: 724) The environment "is located in the mind of the actor and is imposed by him on experience in order to make that experience more meaningful. It seldom dawns on organizational theorists to look for environments inside of heads rather than outside of them." (Weick, 1977: 274)

Indeed, at its core, strategy process and, more importantly, strategic renewal are a matter of creating and maintaining "systems of shared meaning" (Smircich and Stubbart, 1985: 724) Crossan et al.'s. (1999) [36] 4I model (intuiting, interpreting, integrating, institutionalizing) provides the theoretical framework for 'systems of shared meaning'.

Theoretically grounded both in (1) the tradition of organizational psychology or the social psychology of organizations (Weick, 1969, 1977, 1993, 1995; Starbuck; 1983, 1988) as well as (2) the emergent 'prediction-processing brain' or 'free-energy-principle based' framework in theoretical neuroscience (Friston, 2006, 2010; Clark, 2016), the central view taken in this dissertation is that, in particular in today's distributed and discontinuous markets, strategy process' traditional emphasis on information-processing-based adaptation to environmental stimuli epitomizes a fundamental flaw. "Obviously, to consider every situation, event, condition, and so on, and furthermore, to evaluate the vast combinations of environmental relationships is far beyond the capacity of any imaginable method of environmental analysis. Yet, this is what seems to be required for effective strategic management." (Smircich and Stubbart, 1985: 725)

The challenge is not "choosing the right response in light of a given stimulus but…choosing the right stimulus in light of a given goal." (Anderson, 2014: 182-3; emphasis by DBK) Setting a strategic goal is not so much a matter of environmental perception (sensing) but one of purpose-directed environmental interpretation (sensemaking). In particular, at times of environmental scarcity (Schmitt et al., 2016) such as a sudden industry-specific contraction, perception is likely to be univocal industrywide, but its interpretation is certain to differ amongst individual industry participants. Consequently, idiosyncratic interpretation will determine whether strategic

[36] Crossan, M.M; Lane, H.W; and White, R.E. 1999. An organizational learning framework: from intuition to institution. Academy of Management Review 24: 522-537.

renewal is embraced as opportunity or threat to be averted.[37] More importantly, the challenge of our time is to appreciate the critical importance of the circular causality between Upper Echelon's goal-directed top-down predictions on the one side and field operations' bottom-up feeding of environmental data or, for that matter, the **circular co-construction of prediction, perception and action**. This requires cross-hierarchical connectivity (*structure*), a cognitive orientation towards the power of environmental enactment (*cognition*), and generative sensing and sensemaking capabilities in particular at the top of the organization, including the board of directors (*capabilities*).

The core of Weick's interpretation of enactment is that knowledge, information, and understanding cannot exist outside a context of acting. Taylor and Van Every (2000: 244) and Starbuck and Milliken (1988: 40) also highlighted the fallacy of putting perception at the start of the causal sequences and emphasized action's center-stage importance to perception and perceptional filters: "**Perceptions are partly predictions that may change reality, because different perceptions may lead to similar actions, and because similar perceptions may lead to different actions**." (Starbuck and Milliken, 1988: 40; emphasis by DBK)

This perspective is in line with neuroscience's increasingly dominant perspective of the brain as an action-centric prediction-processing machine (Clark, 2016). Clark (2016) asserts that **action, cognition, and perception are continuously co-constructed**. Indeed, "business environments are [not] objective environments, awaiting discovery through the application of formal analytical techniques". (Hodgkinson, 2015:15)

The design of so-called 'noticing systems' (Starbuck and Milliken, 1988) or 'interpretation systems' (Weick and Daft, 1983) lays the foundation for a firm's capacity for strategic renewal. Hierarchical structures, leadership's cognitive capabilities for intuiting (sensing) and interpreting (sensemaking), and, more importantly, the firm's social processes for integrating and institutionalizing goal-directed interpretations of the

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37 "We argue that managerial perception is most critical for renewal **situations of gradual environmental decline** (i.e., environmental dissolution and **environmental erosion**). These situations are characterized by weak and ambiguous environmental signals (Cameron and Zammuto, 1983), which senior executives tend to filter out in order to reduce information complexity (Eisenhardt and Martin, 2000). Strategic renewal is thus strongly dependent on whether or not senior executives perceive the need for taking action (Huff et al., 1992)." (Schmitt et al., 2016: 364; emphasis by BK) "Conversely, **situations of sudden environmental decline** (i.e., environmental contraction and environmental collapse) send strong and clear signals that do not create challenges for managerial perception (Zammuto and Cameron, 1985). In these situations, managerial interpretation is more important, since it determines how senior executives assess the challenges arising from environmental decline, evaluate alternative strategic opportunities, and translate their interpretations into strategic choices (Hambrick and Mason, 1984)." (Schmitt et al., 2016: 364; emphasis by DBK)

‘way of the world’ constitute a firm’s ‘system of shared meaning’ and ‘shared expectations’. It is this system (shaped by organizational structure and processes, and dynamic capabilities) that shapes a firm’s enactment capability and eventually determines the firm’s orientation for strategic renewal as well as its performance and survival.

It is the Dynamic Capabilities View (‘DCV’; Teece et al., 1997; Teece, 2007), in particular its Helfatian interpretation (Helfat et al., 2007) that has generated a promising and growing conversation around linking capabilities, cognition and strategic renewal. However, while powerful as a concept, so far DCV has not provided a unified theoretical framework (Vogel and Guettel, 2013). But Helfat’s interpretation of dynamic capabilities - as an organization’s non-operational and non-routine meta-capabilities “*to purposefully create, extend, or modify its resource base*” (Helfat et al., 2007:1) - lends itself to further development, in particular in view of operationalizing through a cognitive lens its core concepts: sensing (noticing), seizing (sensemaking), and recombining resources (strategic action and renewal).

Helfat et al. (2015) firmly headlined the conversation of ‘managerial cognitive capabilities and the microfoundations of dynamic capabilities’. But there is a need to enrich the conversation with a complementary research stream concerning the board’s cognitive capabilities of sensing and sensemaking in the context of strategic renewal and, more importantly, to link structure/hierarchy, cognition, and capabilities. The challenge is to operationalize sensing and sensemaking in form of concrete dynamic (meta) capabilities.

When non-salient environmental scarcity (see Schmitt et al., 2016) is eventually perceived and available for sensemaking at the managerial/board level, it may be too late. Then, the only option available is likely limited to playing ‘catch-up’ by being a ‘follower’ through M&A and other forms of venture partnerships. In fact, strategic control in form of in-house led radical innovation pre-supposes confidence in the firm’s environmental enactment (sensing/sensemaking) capability to recombine existing resources accordingly and extend the firm’s resource boundaries.

A firm’s purpose and goals must be ‘explainable’ so that the firm’s field (‘bottom’) is empowered to spot early-on transformative signals that are usually ‘invisible’ to the less goal-directed firms. But for intelligence to travel bottom-up and to challenge dominant prediction models at the managerial/board level, a generative process is required that robustly integrates the firm inter-hierarchically with top-down clarity in communication around purpose, prediction-models (worldviews), and predictions. More importantly, the effectiveness of multi-scale bottom-up/top-down integration is dependent on lateral integration at each hierarchical layer. **In other words, the inter-hierarchical connectivity is dependent on intra-hierarchical top-down/bottom-up 'heedful interrelating' in pursuit of 'shared meaning'.**

If "we are to develop a truly comprehensive understanding of the socio-cognitive dynamics of industry leadership, competition, and change, it is essential to consider the **role played by generative mechanisms within and across multiple levels of analysis** — from the individual to the intra-organizational group, to the organizational, inter-organizational and (even inter-) industry levels." (Hodgkinson, 2015:18; emphasis by DBK). In fact, the board of directors is essential to developing a more complete understanding of a firm's industry leadership. **'How do we resolve the intra-company hierarchical disconnect?'** or **'WHAT determines the dynamic coupling of governance and operational channels?'** are important questions relevant to integrating the board into strategy process and understanding a firm's attentional engagement model. This leads to Ocasio (1997, 2005).

There is a macro-micro divide in strategy process research that still awaits to be satisfactorily bridged. Cognitive (Gavetti, 2005; Gavetti and Warglien, 2015) and 'micro-foundations' (Foss and Lindenberg, 2013)[38] lenses, respectively, may assume an essential role in relating individual actors' differentiated perceptions to organizational sensing/sensemaking, goal-directedness, and firm performance (Crossan et al., 2003).

Ocasio's Attention-Based View ('ABV'; Ocasio, 1997) has provided a framework in the form of a metatheory for socially situated organizational action and adaptation, linking structure and cognition: (1) what decision-makers do, depends on their focus (Focus of Attention); (2) what they focus on, depends on the context (Situated Attention); and (3) context depends on the firm's rules, resources, and social relationships (Structural Distribution of Attention). To this date, Ocasio remains one of the most vital neo-Carnegie conversants linking cognition, hierarchy, and strategy (Ocasio et al. 2005; Shepherd et al., 2017). For the purposes of this dissertation, Ocasio's view of "strategy process as assemblages of tightly and loosely coupled networks of

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[38]This dissertation was initially intending to adopt a microfoundations-centric perspective, specifically 'cognitive microfoundations of dynamic board capabilities'. However, **the Free-Energy Governance framework turned out to be not only more potent in resolving the micro-macro divide at the firm level**, but, more importantly and relevant to practice, addresses the cross-hierarchical divide as well as linkage of cognition, structure and capabilities. The literature on microfoundations has been inspirational, though: Felin, T., Foss, N.J. and Ployhart, R.E. 2015. **The microfoundations movement in strategy and organization theory**. The Academy of Management Annals, 9: 575-632; Barney, J. and Felin, T. 2013. **What are microfoundations?** Academy of Management Perspectives, 27: 138–155

operational and governance channels…, [and] strategy formulation as a fluid and distributed process…" (Ocasio et al., 2005) is embraced and further developed[39]. The board of directors' explicit role as an integral part of this distributed process, however, has been rather marginalized.

Analogically to the approach of coupling operational and governance channels in strategic cognition, in a quasi-mirror picture, accelerating advancements in theoretical neuroscience have established the brain's functioning as a deterministic hierarchy of top-down predictions and bottom-up sensory stimuli engaging in circular causality to minimize prediction error or 'free energy' (Friston, 2006, 2009, 2010; Clark, 2016).

Our understanding of the "brain as a passive and stimulus-driven, taking energetic inputs from the senses and turning them into a coherent percept by a kind of step-wise build-up" (Clark, 2016: 51) has moved to the increasingly 'active' view where the "largest contributor to ongoing neural response is the ceaseless anticipatory buzz of downwards-flowing neural prediction that drives perception and action in circular causal flow." (Clark, 2016: 51) Therefore, "**brains are not, fundamentally, in the business of 'processing inputs' at all. Rather, they are in the business of predicting [*enacting*] their inputs**. This pro-active neural strategy keeps us **poised for action**". (Clark, 2016: 52; emphasis by DBK)

This interpretation of brain functioning is essential to Weick's concept of enactment: we determine our goals and then enact '*our* map as *the* territory'. More importantly, for the purposes of this dissertation and in analogy to Clark's interpretation of the brain's functioning, no board of directors can afford to be a passive, 'stimulus-driven' and 'energetic inputs'- intaking organ. And this is equally true for all hierarchical levels, in particular the field-level where the power of '*signal sourcing*' resides. **Unless the board is 'in the business' of predicting and enacting proactively inputs through action-based engagement with the world (pro-actively generating bottom-up stimuli), the success of strategic renewal and firm survival is likely to be compromised**.

Strategy process research's consideration for the role of the board of directors is rather non-existent. Upper Echelon theory (Hambrick and Mason, 1984) is primarily concerned with senior executives, though, Hambrick et al. (2008) made calls for deepening our understanding of the board's integral role within Upper Echelon.

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[39] See also Floyd and Lane (2000) who define strategy process as rather distributed with middle-management assuming an important role rather than just being top-down directed.

As McNulty and Pettigrew highlighted in their important contribution 'Strategists on the Board', "**knowledge about the structure and composition of boards exceeds knowledge about their behavioural dynamics**." (1999: 49) Indeed, we know very little about the informal and tacit processes that critically shape the formal governance output. The conclusion of their study is that boards rarely initiate but can challenge and contribute to strategy. Their study is relevant to the extent that it went beyond the traditional 'demography-centric input-output' approach and confirmed the importance of the behavioural dimension in assessing a board's role in strategy process – independent of any regulatory or law-imposed mandate or boundary.

But the focus on behavioural dynamics limits the study's relevance to its time and context and only marginally contributes to our understanding of when and how boards as a collective organ can make a difference to strategy process. This is in particular true for setting (re-interpretating in the context of time) the firm's purpose and initiating strategic renewal as well as reinforcing the sustainability of transformative renewal processes.

Forbes and Milliken (1999), in a seminal contribution, made an important step towards opening the black box of a board's 'strategy dynamics' by focusing on (thereto understudied) process variables linking demography and group processes/behavior. Indeed, "the very existence of the board as an institution is rooted in the wise belief that **the effective oversight of an organization exceeds the capabilities of any individual and that collective knowledge and deliberation are better suited to this task**." (Forbes and Milliken, 1999: 490)

For the purposes of this dissertation, Forbes and Milliken's contribution is relevant in three regards: (1) it is impossible to meaningfully infer board performance from demographic variables in the absence of a *process model* linking demography and output; (2) the board's role as a group is essentially a *cognitive role* and therefore a cognitive rather than behavioural perspective is critical to better understanding the essence of board performance; (3) *effort norms* (i.e., intensity and cognitive resourcefulness of the task-performance behavior), *cognitive conflicts* (i.e. leveraging differences in perspective), and the *use of knowledge and skills* (i.e. not just their presence but use) are important process variables underlying board performance.

While parsimonious as a model, Forbes and Milliken fail to explain how cognitive conflicts can be leveraged beyond board performance but in service of firm performance and survival. The model is structurally isolated from the rest of the organization and therefore of limited value. More importantly, it does not relate to environment but treats input of data and stimuli as a black box. Nonetheless, Forbes and Milliken have laid the foundation for a conversation framing the cognitive and social dimensions of board effectiveness (Westphal and Zajac, 2013)[40]. To assess the potential for the board's role in strategy process we must move beyond the 'board-table' into the organization, beyond top leadership.

How diversity and leadership of strategically involved boards influences the speed and breadth of TMT strategy-related capabilities was the central research focus of Bongjin et al. (2009). This important contribution proposes a model linking board configurations with TMT's strategic action capability, moderated by environmental dynamism and complexity. Bongjin et al. (2009) convincingly propose a board paradigm beyond the traditional control and service dimensions but where environmental dynamism serves as an important control variable determining board configuration so that the board's strategic role or mandate can be fully leveraged. The authors rightly criticize the increasing involvement of regulators across all relevant capital markets jurisdictions imposing comprehensive rules governing board structure and process that "may actually harm firm performance." (Bongjin et al., 2009: 738). Corporate governance 'best practices guidelines' may rather fuel 'governance inertia' driven by the quest for formal compliance.

But like so many studies in corporate governance - limited by practical constraints in access to meaningful data combined with the academic pursuit of a parsimonious model – Bongjin et al.'s study fails to enlighten the dynamic black box of board-TMT interaction around initiating strategic purpose and renewal, in particular as a function of the social and generative dynamics underlying sensing and sensemaking.

Haynes and Hillman (2010)[41] have further developed the concept of board capital (first advanced by Hillman and Dalziel, 2003) in relation to CEO power to better understand the board's impact on strategic change. While their study establishes a convincing relationship between the board's impact on strategy process as a function of human and social capital as well as the CEO's power, its relevance is compromised by the

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[40] Conversations around cognitive fallacies such as blind spots and biases in the boardroom can trace their epistemological origins to Forbes and Milliken (1999).
Merchant, K. and Pick, K. 2010. **Blind spots, biases, and other pathologies in the boardroom**. New York: Business Expert Press.

[41] According to Haynes and Hillman (2010: 1149; emphasis by DBK), "boards affect strategic decisions of the firm through their human and social capital, as indicated by studies that **link individual indicators of board capital such as directors' functional, occupational, and other experiences to the firm's strategy** (Judge and Zeithaml, 1992; Carpenter and Westphal, 2001; Jensen and Zajac, 2004). For example, the **strategic context of directors' social network ties determines the board's ability to contribute to strategic decision making** (Carpenter and Westphal, 2001)."

limitations of its rather normative and static input variables: a board's prediction models underlying strategic decision-making cannot be treated as static, but should be subject to 'double-loop' learning processes resulting from a dynamic, social, and generative sensemaking process with the rest of the organization, beyond the CEO and senior management.

To date, none of the studies have addressed the 'hierarchical disconnect' between the board and the rest of the organization, in particular when analyzing the initiation of strategic renewal. **While the board has significant powers in changing the CEO, its contribution throughout the strategic renewal process is rather bound by the power and influence of the CEO, the Chairman, as well as the Chairman-CEO relationship**. But above all, the board needs to exercise independent sensing and sensemaking capabilities to initiate strategic renewal, fulfil its 'strategic control' mandate, and be of relevance to firm performance and survival. Environmental dynamics, ownership structure - whether private, family- or private-equity-controlled or publicly listed – certainly have a moderating impact on the board's strategic role.

For the purposes of this dissertation, the moderating impact of family control upon the board's strategic control is of particular interest:
"*Conditions such as concentrated ownership, lengthy tenures, and profound business expertise give some family-controlled business (FCB) owners the discretion, incentive, knowledge, and ultimately, the resources to invest deeply in the future of the firm. These long-term investments accrue from particular governance conditions and engender competitive asymmetries—organizational qualities that are hard for other firms to copy*." (Le Breton-Miller and Miller, 2006: 731)[42]

In summary, in corporate governance research - but also in practice - the board of directors remains cognitively disconnected from the firm's generative process of initiating strategic renewal. Environment is commonly treated as objective reality exogenously determined as well as 'framed' by the CEO and/or Chairman-owner (family or private equity). Consequently, the board's strategic role (or power for that

[42] "Certain types of **family businesses are especially apt to develop distinctive core competencies**. First, they embrace a number of governance and leadership conditions that invite long-term investments and increase the resources available to invest (Carney, 2005; Habbershon & Williams, 1999; Sirmon & Hitt, 2003; Williamson, 1999). Second, their investments are especially likely to take the form of (1) **generously funding a substantive mission** and its central competencies, (2) fostering the talent to create those competencies, and (3) building close relationships with outside stakeholders that access resources and allow a firm to focus on what it does best. Such investments create competitive asymmetries in that they are difficult to emulate for firms with different governance structures given the different incentives and conditions associated with those structures (Miller, 2003)." (Le Breton-Miller and Miller, 2006: 732; emphasis by DBK)

matter) is rather limited to domain-specific advice and networking within a pre-defined or dominant logic dedicated to CEO-framed contents; i.e. a ‘strategic sounding-board’.

Unless strategy process is redefined as a generative top-down/bottom-up process of strategic renewal and the board of directors integrates itself as a critical variable in this process, the board is likely to remain relegated to ‘strategic irrelevance’. Regrettably, corporate governance research is likely to continue focusing on board effectiveness (inside the board room) rather than firm performance and survival. The latter is not only dependent upon the board ‘reaching’ into the organization beyond the board and CEO but on conceiving an entirely new logic of organizing.

Overall, the influence of studies in the field of corporate governance remains largely confined to that domain – theoretically anchored in agency (Jensen and Meckling, 1976; Fama and Jensen, 1983)[43] and stewardship theory (Davis et al., 1997)[44] or a combination thereof (Hillman and Dalziel, 2003) - with little or no reference to or impact on the conversation of strategic cognition and renewal. Corporate governance research remains trapped in “universally prescribed board configurations” emphasizing the board’s “control and service roles” (Bongjin et al., 2009: 728) at the expense of researching the board’s cognitive contribution to strategy process. The “nature, extent, and consequences of board involvement in strategy remain elusive” (Bongjin et al., 2009: 728). Indeed, **the very limitations of corporate governance research may be an astute reflection of the very real limitations of the board’s strategic role**.[45]

We now turn towards strategy process research and its consideration for the board’s strategic role. Overall, the period of 1998-2001, a time of ‘irrational exuberance’[46]

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[43] Fama, E. F., and Jensen, M. C. 1983. Separation of ownership and control. **Journal of Law and Economics**, 26: 301–326; Jensen, M. C. and Meckling, W. H. 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. **Journal of Financial Economics**, 3: 305-360.

[44] “We apply agency and stewardship theories to detail contrasting, yet potentially complementary, approaches to governance. Rooted in economics and finance, **agency theory** informs a control approach aimed at curbing self-serving behaviors of managers (agents) that may negatively impact owners' (principals) wealth (Eisenhardt, 1989). **Stewardship theory** details a collaborative approach, tapping insights from sociology and psychology. Proponents of this approach strive to enhance board-management ties and decision making by empowering managers (stewards) of the firm (Davis, Schoorman, & Donaldson, 1997).“ (Sundaramurthy and Lewis, 2003: 398; emphasis by DBK)

[45] A notable exception is **Hilb’s (2012) practice-centric approach**, hence, ‘**New Corporate Governance**’.

[46] Alan Greenspan, then Federal Reserve Board Chairman, gave a speech to the American Enterprise Institute on December 5, 1996, saying that “**irrational exuberance has unduly escalated asset values**”. While markets only briefly dipped, the period from 1996 to 2001/2 experienced ‘irrational exuberance’ and a neglect for prudent corporate governance. Strategy rather than monitoring was corporate governance’s dominant focus. Unfortunately, after the so called ‘dot-com’ crisis and numerous high-profile corporate failures such as Enron, Tyco, WorldCom, and many others, **the governance pendulum**

across all leading capital markets and characterized by a governance focus emphasizing a strategic/advisory rather than monitoring centric lens[47], proves to have been a productive period in board-related strategic management research.

Rindova (1999) was amongst the first to link managerial cognition (Kiesler et al., 1982) to corporate governance, distilling the board's distinct cognitive contribution to strategy process, specifically in terms of 'environmental scanning and interpretation'. Her contribution can be considered seminal, laying the grounds for a 'stewardship-inspired' corporate governance approach that is now widely adopted by leading private equity firms where top management team and board strategize together, often in highly complementary ways and based upon alignment of interests rather than management of conflict of interests.[48]

According to Rindova (1999), board directors do impact decision-making in form of three varieties: external, requisite, and representative. The concern of this dissertation is requisite variety or 'cognitive conflicts' (Forbes and Milliken, 1999): "Directors' contribution as a source of requisite variety is to increase the pool of available interpretative frameworks on which the decision group can draw [to adequately address the complexity of the environment]." (Rindova, 1999: 966; parentheses added by DBK). However, Rindova does not open the black box of how this variety of interpretative frameworks on an individual level transmorphs into an organizational ('shared') interpretation, not least at the lateral level of the board of directors.

Further, Rindova also treats environmental stimuli as objective reality - to be sensed and make sense of, with 'clever analysis preceding strategic action'. She emphasizes information processing capabilities and *absorptive capacity*[49] in form of the board's

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- as embodied by the 2002 Sarbanes-Oxley US legislation with global reach - has overemphasized the independent monitoring and non-strategic board role as 'best practice'. Nobel prize winning Yale professor Robert Schiller used the expression for his book publication 'Irrational Exuberance' in 2000, eventually coinciding with the start of a stock market contraction.

[47] In fact, it was a time when **board members at some of the world's largest companies developed a venture capitalist's self-identity, trapped in blind followership of over-dominant and -confident CEOs**, creating not only multi-dimensional conflicts of interest but eventually fertilizing self-enrichment at the expense of shareholders and the common good (notable examples at the time were Tyco, Enron, and WorldCom).

[48] See Davis, Schoorman and Donaldson (1997) for stewardship theory. For the link between private equity governance models and performance see Acharya et al. (2013); and Harris et al. (2014).

[49] The "ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends is critical to its innovative capabilities. We label this capability **a firm's absorptive capacity** and suggest that it is largely **a function of the firm's level of prior related knowledge**. The discussion focuses first on the cognitive basis for an individual's absorptive capacity including, in particular, prior related knowledge and diversity of background. We then characterize the factors that influence absorptive capacity at the organizational level, how an organization's absorptive capacity differs

‘problem-solving’ and ‘thinking through’ expertise ‘developed in primary occupations’. Rindova appreciates the dynamic nature of strategy process when she postulates that board participation in strategic decision-making rises with increasing environmental complexity and uncertainty. However, Rindova’s approach is rather static as she fails to embrace not only the circular causality of bottom-up stimuli and top-down predictions, interchangeably treats perception as interpretation but, more importantly, falls short of connecting the board table to rest of the organization.

Golden and Zajac (2001), in ‘*When will boards influence strategy? Inclination x power = strategic change*’, developed a power-centric model suggesting that “strategic change is significantly affected by board demography and board processes”, and more importantly, that “**a board’s inclination for strategic change interacts with a board’s power to affect change**”. (Golden and Zajac, 2001: 1187; emphasis by DBK)

‘What are the particular conditions under which boards are more likely to think, act, and decide independently and achieve strategic change?’ is Golden and Zajac’s essential research question. Demographic variables such as board size and tenure, average age of board members, and board diversity in terms of occupational heterogeneity affect strategic change curve-linearly. Too much or too little has a rather negative impact. Further, the demographic variables are then related to board processes to capture collective and cognitive dimensions such as attentional focus in terms of orientation on rather internal than external issues. The richness of the Attention-Based View (Ocasio, 1997) is put into perspective. But, eventually, it all comes down to the board’s power, here defined as the board’s relative power over that of the CEO (Golden and Zajac, 2001:1098): “preferences or inclinations may be an important initial condition, but power amplifies the observed effect of those preferences.” (1094).

While rich and parsimonious as a model, the principal shortcoming of Golden and Zajac (2001) is the absence of structurally connecting top-down predictions with bottom-up stimuli. The study and model cannot explain how the board (laterally) generates an inclination for strategic renewal in the first place. Demographic and procedural variables

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from that of its individual members, and the role of diversity of expertise within an organization. We argue that the development of absorptive capacity, and, in turn, innovative performance are history- or path-dependent and argue how lack of investment in an area of expertise early on may foreclose the future development of a technical capability in that area. We formulate a model of firm investment in research and development (R&O), in which R&D contributes to a firm's absorptive capacity". (Cohen, W. M., and Levinthal, D. A. 1990. **Absorptive capacity: a new perspective on learning and innovation**. Administrative Science Quarterly, 35: 128-152; p. 128) aside, the study fails to take into consideration how the board formally and informally interacts with the organization beyond the CEO.

Therefore, board power remains a black box. The board's relative power over the CEO is a function of knowledge, information-flow, and learning capability. To set free the true cognitive and collective power of the board may be less a function of demographic and procedural variables but the Chairman's power. The Chairman's inclination for strategic change and the determination to foster a collective dialogue at the board level (lateral interaction to exercise 'strategic control') while connecting with the rest of the organization – beyond the CEO - are essential.

However, there are three important conclusions to take forward from Golden and Zajac (2001): **(1) demographic and procedural variables impact strategic change rather curve-linearly; (2) power relationships are critical to understanding the 'impel vs. impede' debate in strategic renewal; (3) attentional focus and engagement in terms of an Ocasioian linkage of cognition and structure (Ocasio, 1997) is a promising venue upon which to pursue future research**.

By default, uncertainty and complexity are rather subjective concepts but are consistently deployed in management research as objectively determined. Environmental sensing and sensemaking are 'non-sense' in the absence of having set the firm's strategic purpose and goals in the first place. The biggest challenge in fast-paced and distributed markets is to set (and continuously re-interpret) purpose and goals to empower all levels of the organization to sense relevant stimuli and engage in cross-hierarchical shared sensemaking by way of hypothesis-testing. Sensing and sensemaking are always a function of 'explainable' **shared purpose** and goals. In the absence thereof, there is no 'light torch' (or Markov blanket, see 1.7.3) to reveal environmental significance (through hypothesis-testing of assigned probabilities).

Foss and Lindenberg (2013) make an important - microfoundations-centric - contribution by introducing a goal-framing perspective to strategic value creation. Indeed, "behavioral theory focuses all attention on cognitive issues, such as perception, framing, experiential and vocational learning, and heuristics". (p. 87) But "attention is selective; memory is selective; concepts and chunks of knowledge are at any given moment only selectively accessible. Selectivity comes about by the twin process of activating some aspects and inhibiting others (cf. Shah, Friedman, & Kruglanski, 2002). This creates important differences regarding how individuals look at a situation, the key point in behavioral strategy. However, **the link between these cognitive effects and**

motivational effects is brought about by overarching goals." (p. 87; emphasis by DBK)

While Foss and Lindenberg's (2013) linkage of motivation, goal-framing, and value-creation is worth considering[50], it fails to resolve the very dilemma they highlight, i.e., that "overarching goals of employees are subject to a top-down contagion process by overarching goals from top management." (p. 86) In fact, goal-framing theory[51] lacks a structural, cognitive, and capabilities-centric foundation resolving a firm's top-down/bottom-up dichotomy and, similar to existing and traditional logics of organizing, falls short to explain WHAT truly empowers goals to leverage members' full potential for firm-level value creation.

In business, there has been a long-standing tradition of goal-framing in the form of the OKR approach (objectives and key results).[52] However, no governance framework has been yet advanced that can explain how goals (prediction models) come into existence in the first place (a form of Bayesian *prior*).

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[50] "On the basis of goal-framing theory one can thus argue that the heart of value creation in firms lies in the motivation for joint production for all involved. No matter what the firm wants to achieve, **optimal value creation will always crucially depend on eliciting a motivation among employees that is directed at common goals**, such that organizational members are motivated to choose their actions in terms of joint goals and exert intelligent effort to reach joint goals". (Foss and Lindenberg: 2013: 96; emphasis by DBK)

[51] "Goal-framing theory distinguishes between three overarching goals. There is the overarching hedonic goal, which expresses the desire to improve (or preserve) the way one feels right now, related to one's need fulfillment; there is the overarching gain goal, which expresses the desire to improve (or preserve) one's resources; and there is the overarching normative goal, which expresses the desire to act appropriately in the service of a collective entity, such as an organization or a group. When one of these three goals is focal, it captures so many of the cognitive and motivational processes that it truly "frames" the situation. Thus, these **overarching goals govern what we attend to** (Posner & Petersen, 1990), **what alternatives we consider**, and **what knowledge we draw on** (Förster et al., 2005; Gollwitzer & Bargh, 1996; Kruglanski & Köpetz, 2009). In turn, these cognitive processes have an impact on motivation by inhibiting other goals (Shah et al., 2002), by influencing what we like and dislike (Ferguson & Bargh, 2004), and by governing the expectations about what other people will do and the criteria that are used to judge goal realization or failure (Carver & Scheier, 1990)." (Foss and Lindenberg, 2013: 88; emphasis by DBK)

[52] **OKR (objectives and key results), in contrast to just simply pursuing KPIs (key performance indicators), has become an increasingly popular framework for empowering teams to reach their full potential through aligning around objectives (goals)**. According to Wikipedia, "the development of OKRs is generally attributed to **Andy Grove the 'Father of OKRs'**, who introduced the approach to Intel during his tenure there and documented this in his 1983 book *High Output Management*… OKRs comprise an objective—a clearly defined goal—and one or more key results—specific measures used to track the achievement of that goal. The goal of OKR is to define how to achieve objectives through concrete, specific and measurable actions." "Larry Page, the CEO of Alphabet and co-founder of Google, credited OKRs: "OKRs have helped lead us to 10x growth, many times over. They've helped make our crazily bold mission of 'organizing the world's information' perhaps even achievable. They've kept me and the rest of the company on time and on track when it mattered the most." (Wikipedia; copied on November 17, 2019: https://en.wikipedia.org/wiki/OKR; emphasis by DBK)

Setting a firm's strategic target model is rather equivalent to the process underlying the design of product innovation - from ideation to prototyping: goal-directed, enactive, generative, and interactive. It is a form of experimentation or generative error-minimization. Fundamentally, it is a process of 'social construction of reality' involving all levels of the organization as well as selected constituencies of the environment, i.e. the firm's ecosystem. While certain elements of the process are formalized, its effectiveness is largely dependent on a mind-set that cultivates ad-hoc, informal, cross-hierarchical, and goal-directed engagement in pursuit of learning (minimizing the mathematical difference between prediction and accuracy, i.e., minimizing 'free-energy').

The need for a more **learning-centric and 'mindful'** ('free-energy principle' and 'dynamic board capabilities' inspired), **enactivist** (emphasizing environmental enactment as opposed to adaptation), and **complete** (dynamically integrating the board of directors with the rest of the organization) **strategy process model** is challenging traditional thinking and established paradigms in strategic management, corporate governance, and generally organizational design. "**Our problem is to understand the changes that the organization (and the individual) will have to make if it is to obtain the most possible human energy for productive effort**." (Argyris, 1995: 11-12; emphasis by DBK)

In an environment characterized, for example, by sudden environmental scarcity such as industrial collapse or contraction (Schmitt et al., 2016), it is not so much perception that determines the firm's performance differential over time but the firm's capability for idiosyncratic interpretation (sensemaking) and environmental enactment. Every market signal is enriched with potential for opportunity. Revealing the signal's relevance is fundamentally a function of the clarity of purpose and goal-directedness: top-down/bottom-up. Whether the firm's orientation is to spot and embrace opportunity or to perceive threat and avoid uncertainty is critically determined by whether the firm's cognitive orientation is one of alignment (adapt to an exogenously defined and 'pre'-determined context; top-down imposed/induced) or purpose-directed co-creation (enact the industrial context; bottom-up, i.e. autonomously).[53]

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[53] "**The tension between induced and autonomous strategic renewal reflects the fundamental question of who initiates and drives strategic renewal initiatives**." (Schmitt et al., 2018: 89; emphasis by DBK) "The induced perspective builds on upper echelon (Hambrick and Mason, 1984) and its central premise that executives' experiences, values and personalities influence their interpretations of the situations they face and, in turn, affect their choices (Hambrick, 2007)." (Schmitt et al., 2018: 89) "Past strategic renewal research shows that **top-down driven renewal initiatives can create** institutionalized contexts that determine acceptable and inacceptable behaviours and processes, effectively creating

While perception and interpretation are moderated by industrial context (e.g., environmental scarcity), vice-versa, individual firms' strategic renewal initiatives dynamically shape industrial context. Referring to this dissertation's case study, for example, European media companies like Axel Springer and Shibsted have substantially changed the context of Europe's media industry by way of leading examples of digital transformation. Ringier, the subject of this dissertation's case study, was rather a 'smart and fast-follower' of 'enactment strategies' originated by others.

The research gap identified here is not only to link and take the conversations initiated around attention and cognition (Ocasio, 1997; Ocasio et al., 2005), strategic renewal (Agarwal and Helfat, 2009), and cognition and dynamic capabilities (Helfat and Martin, 2015; Helfat and Peteraf, 2015), respectively, from the managerial to the board level but an integrative framework is proposed to dissolve the hierarchical disconnect as manifested in misleading dichotomies such as top-down/bottom-up as well as organization/environment, for example. They are embraced not as dichotomies but as duality: "mutually enabling and a constituent of one another." (Farjoun, 2010: 203)

This new 'extended' conversation is defined as 'Free-Energy Governance' and contrasts with existing views and theories in corporate governance as well as strategy process. All existing frameworks and studies remain characterized by one or a combination of the following fundamental limitations:

(1) **environment and environmental change are generally treated as objective reality** to be sensed, made available for sensemaking (interpretation), and adapt to (resource recombination). Accordingly, information-processing and adaptive capabilities as well as domain expertise take center-stage; however, too often at the detriment of attention to cognitive capabilities fostering environmental enactment as a basis for firm performance and survival;

(2) **strategic renewal is treated as a 'content' rather than a 'process' challenge';** content follows process, as much as strategy follows structure; a discontinuous and distributed world imposes a new categorical imperative: above all, define timelessly the firm's purpose; the right process is essential to continuously generating the relevant strategy content;

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barriers to bottom-up strategic renewal initiatives (Verbeke et al. 2007). Senior managers therefore risk reinforcing their own, centralized renewal orientation (Lindell 1986), while **stifling lower-level managers and employees' creative abilities in the process**" (Schmitt et al., 2018: 90; emphasis by DBK)

(3) **strategic renewal is studied at the managerial level but not the board level**; and when studied at the board level, it is rather trapped in the 'board-room' and disconnected from the rest of the organization; board effectiveness rather than firm performance and survival remains the predominant concern; it is essential to move from 'corporate' to 'organizational governance' [54] to empower strategic renewal;

(4) **formal processes are the focal unit of analysis;** as reflected in predominant 'best practices' that consider informal engagement as suspicious of potentially breeding 'conflict of interests'; unavoidably, formality has a tendency to reinforce friction and increase 'free-energy' as only 'formalized' data and stimuli can reach the 'prediction-makers'; hence, there is a need to 'de-formalize' and 'cognitize' organizing[55];

(5) **the coupling of governance and operational channels is usually unidirectionally top-down and exploitation-centric** further strengthening the structural bottlenecks that fuel 'free-energy' (i.e. error, surprise, and the perception that the world has become unpredictably uncertain); the dimension of cross-hierarchical (cognitive) 'recognition density' is altogether non-existent;

(6) **demographic and generally measurable variables dominate with no due attention to the study of strategy-relevant meta-capabilities at the board level;** consequently, the board is reduced to a rather passively reactive and stimulus-intaking organ; thus, far removed from the notion of generator and monitoring body of prediction-models that Free-Energy Governance promotes; lastly, the board's potential role in developing strategy-relevant cognitive (dynamic) capabilities at the managerial level have been ignored altogether.

[54] The term **'organizational governance' as opposed to 'corporate governance' is advocated**. 'Corporate' is usually interpreted as top-down and formal – consequently, reinforcing 'financial control' at the expense of 'strategic' control.

[55] In "every formal organization there arise informal organizations" and the "roots of these informal systems are embedded in the formal organization itself and nurtured by the very formality of its arrangements." (Blau, P. and Scott, R. 1962. Formal organizations. Chandler: San Francisco, 6-7; quoted in Argyris, 1995: 9)

1.2 Research objective and question

The research objective is to establish a cross-hierarchically and dynamically integrated organizational governance framework that defines organizing and strategic renewal as a generative 'unsupervised deep-learning system'[56] (bottom-up/top-down/lateral)[57]: Free-Energy Governance.

The unit of analysis is the sustainability of continuous strategic renewal (and therefore the prospects of firm survival) determined by the triplet of a firm's (1) *structure* (coupling governance and operational channels as a matter of top-down/bottom-up prediction-error-minimization), (2) *cognition* (the ability to enact as opposed to adapt to environment), and (3) *dynamic board capabilities* (duality management of exploitation/ exploration and financial/strategic control).

The future of firm performance and, therefore, firm survival will be increasingly dependent on 'generative-sensing-centric' leadership capabilities building goal-driven and purpose-directed companies. The context is a discontinuous and distributed world where continuous strategic renewal is the mandatory norm.

***Organizing* must be re-defined as a dynamic linkage of *structure* (hierarchy*)*, *cognition*, and *capabilities* that establishes purpose and goals (prediction models), generate purpose-directed predictions, and facilitate predictions' fallibility-testing through top-down/bottom-up generative sensing and sensemaking processing field-data (free-energy minimization).**

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[56] Unless embraced as a learning system, any governance system will be rather static and relegated to irrelevance, certainly in terms of impact on firm performance and survival.

[57]Mom et al. (2007), although focused on the managerial rather than firm-level, have studied all three dimensions (bottom-up/top-down/lateral) in the context of 'knowledge intake' and its impact on exploitation and exploration activities: "Exploration and exploitation related activities of managers are facilitated by vertical knowledge flows, i.e. by managers' **top-down and/or bottom-up** knowledge inflows (Burgelman, 1983b, 1991; Floyd and Lane, 2000; Rivkin and Siggelkow, 2003; Van Cauwenbergh and Cool, 1982). Others point to the important role of **horizontal** knowledge flows within an organization with regard to understanding exploration and exploitation related activities (e.g. Gupta and Govindarajan, 1991; Mom et al., 2005; Nonaka, 1994; Schulz, 2003; Subramaniam and Youndt, 2005). Therefore, we will investigate not only top-down and bottom-up knowledge inflows but also horizontal knowledge inflows of managers. More specifically, we will focus on the following research question: **how do top-down, bottom-up, and horizontal knowledge inflows of managers affect their exploration activities and exploitation activities?**" (p. 911; emphasis by DBK)

Accordingly, the essential research question is:

In a discontinuous and distributed world*:*

(1) WHAT form of organizational governance framework, firm-level environmental engagement, and capabilities are essential for strategic renewal and firm survival? ***Or*** *(more specifically)*
(2) WHAT (a) cross-hierarchical framework coupling governance and operational channels in form of recognition density, (b) firm-level environmental engagement, and (c) dynamic board capabilities are essential for the sustainability of successful continuous strategic renewal and, hence, the firm's prospects for survival?

"**The 'What' question** usually entails a variance theory explanation of the input factors (independent variables) that statistically explain variations in some outcome criteria (dependent variables)."[58]

[58] Van de Ven (2007: 22; emphasis by DBK)

1.3 Relevance

'Free-Energy Governance' provides a unitary and integrative framework linking structure (hierarchy), cognition, and capabilities. The framework is multidisciplinary, integrating strategy process, corporate governance and theoretical neuroscience research and resolving dichotomies such as bottom-up/top-down, stability/change, exploration/ exploitation, strategic/financial control, formal/informal, firm/environment, and threat/opportunity. In particular, in a world that is increasingly discontinuous, distributed and, hence, characterized by an 'urgency' for digital transformation, for example, abrupt environmental scarcity is rather impossible to predict. The lifespan of predictions and prediction models, analogically to that of companies, is drastically shortening.

Therefore, corporate governance as well as strategy process demand a new logic, framework, and capabilities for the board of directors to initiate and monitor continuous strategic renewal as a foundation of firm performance and, more importantly, firm survival. Top-down directed and centralized strategy processes may be effective during certain stages of a firm's lifecycle but are likely to reinforce dominant logics of exploitation at the expense of exploration, unless balanced with bottom-up 'knowledge intake'. (Mom et al., 2007)

1.3.1 Relevance from a research perspective

This dissertation develops a cross-hierarchically and dynamically integrated organizational governance framework and establishes the board as a potentially critical variable determining the success of continuous strategic renewal, measured in the prospects of firm survival.

The new framework - Free-Energy Governance - links structure (hierarchy), cognition, and capabilities. The successful initiation as well as sustainability of strategic renewal is defined as a matter of 'free-energy'- or prediction-error minimization. Upper Echelon is redefined as including the board of directors. Specifically, the board of directors' effective impact on the sustainability of continuous strategic renewal is determined by the board's (1) organizational embeddedness (reaching into the organization beyond the board table) in form of circular causality (*structure/hierarchy*) as well as (2) dynamic (cognitive) *capabilities*.

This dissertation's core underlying thesis is that in a 'distributed world', a cognitive lens may not only provide the more pertinent insights but pursuit of bottom-up empowered strategic control (as opposed to top-down directed financial control) may be essential to the long-term success and sustainability of strategic renewal and firm survival. **Changing the logic of *organizing* cannot be left to and implemented by senior executive leadership only. The board of directors must assume a critical role in re-defining organizing as a matter of free-energy-minimization.**

"'Free-Energy Governance' is the opening chapter of a new logic of *organizing*." (Khezri, 2020: 40) The reach, nature, and relatedness of strategy process and corporate governance research, respectively, are redefined and both fields are partly coalesced through a neuroscience inspired framework where firm survival rather than firm performance is the ultimate goal.[59]

It cannot be emphasized enough that this dissertation is meant to be the starting point of a new conversation, laying the foundation for future research. Indeed, future empirical research, in particular in form of longitudinal studies, should prove that the Free-Energy Governance framework can serve as both (1) a superior governance framework as well as (2) a predictive early-warning system for firm survival-at-risk. The consistently shortening lifespan of firms is in need of a theory that can be empirically challenged as a basis for enlightening the practice of strategic renewal.

1.3.2 Relevance from a practice perspective

The practical implications are potentially far-reaching. Generally accepted 'best practices' governance guidelines and regulations increasingly dominating leading capital markets jurisdictions are potentially counterproductive and may effectively be a source of inertia compromising firm performance and reinforce financial control (i.e., external innovation in form of M&A and joint ventures) as opposed to nurturing strategic control (in-house radical innovation creating new growth markets). There is a danger that the board's traditional monitoring and advisory roles are relegated to irrelevance in a world that increasingly mandates continuous strategic renewal.

59 This dissertation represents the view - for the reasons outlined in the 'Problem Analysis' - that corporate governance related research, even in the context of the Strategic Management Journal, are of limited relevance to guiding Upper Echelon in improving the firm's prospects for firm survival. A good example of such an 'anti-clocked' study is: Oehmichen, J., Schrapp, S. and Wolff, M. 2017. **Who needs experts most? Board industry expertise and strategic change - a contingency perspective**. Strategic Management Journal, 38: 645-656.

Dominant corporate governance logics, independent of their 'color'[60], are limited in addressing digital age's strategic mandate for a 'corporate wholesale reinvention'. Indeed, the question arises, whether too much burden is left to the executive leadership as the board is less and less capable of matching the demands of distributed environments.

The optimal governance regime for any particular firm at any particular point of time in the firm's lifecycle varies. But corporate boards must fundamentally recalibrate their role so that they can create competitive advantage measured as a function of firm performance and, in particular, firm survival. Cognitive rather than stereotypical capabilities and variety (see Hilb and Jent, Diversity Optima, 2007)[61] are of increasing relevance to the board's strategic mandate, composition, and impact beyond the boardroom.

Traditional conceptions of corporate governance are re-defined as organizational governance. Free-energy minimization becomes central to firm performance and survival as the data of the field is empowered to talk to and challenge decision-makers' predictions in 'real-time' in pursuit of purpose-directed error- and surprise-minimization. **To borrow an analogy from machine learning, traditional corporate governance is at best equivalent to 'supervised learning'. But as the environment is increasingly distributed and discontinuous, the real challenge is to minimize surprise, i.e. prediction error. As the world is less and less rule-bound, 'reinforcement learning' is not a viable strategy.**

"*According to the free energy principle, the fundamental drive of human thought isn't to seek some arbitrary external reward. It's to minimize prediction error. Clearly, neural networks ought to do the same. It helps that the Bayesian formulas behind the free energy principle - the ones that are so difficult to translate into English - are already written in the native language of machine learning.*" [62]

'Free-Energy Governance' provides a compelling framework to empower a firm to mobilize "the most possible human energy for productive effort" (Argyris, 1995: 11-12) across the entire organization (including the board of directors as well as the firm's field

[60] There is a range of types of boards, varying from strategic ('stewardship') to control ('agency') orientation, and from 'shareholder-value' to 'stakeholder' centrism.

[61] Visit https://www.ipmag.ch/en/diversity/ to directly experience online the three-layer 'Diversity Optima' panel.

[62] Raviv, S. December 2018. The genius neuroscientist who might hold the key to true AI. Wired Magazine (copied on January 5, 2020: https://www.wired.com/story/karl-friston-free-energy-principle-artificial-intelligence/; emphasis by DBK)

management close to resource markets) and into the firm's ecosystems driven by surprise-minimization to optimize the prospects for firm survival.

Firms are challenged to fundamentally re-design their governance regimes within and beyond the 'boardroom'.[63] Free-Energy Governance serves as a design-framework.

63 "Rather than augmenting hierarchies, [natural systems theorists] **minimize vertical distinctions and flatten hierarchies**, and rather than creating new, specialized lateral roles and relations, they encourage **more direct, open, face-to-face communications among any or all participants** as required." (Scott and Davis, 2007: 144)

1.4 Research outline

The dissertation is divided into four parts: (1) Problem Analysis, (2) General Theoretical Part, (3) Particular Empirical Part, and (4) Conclusions.

'Problem Analysis' identifies the relevant conversations and conversants around the essential topic linking structure (hierarchy), cognition, and (dynamic) capabilities in a distributed and discontinuous world. The research gap is framed and the need for a new, cross-hierarchical, and more dynamic corporate (organizational) governance framework is established. The research question is formulated, and the intended research method is briefly outlined as are the boundaries of the dissertation. The chapter concludes with the definition of key concepts.

'General Theoretical Part' is divided into three chapters. First, 'Free-Energy Governance' is defined around six theoretical pillars: (1) Upper Echelon View, (2) Attention-based View, (3) Dynamic Capabilities View; (4) Enactivist Approach, (5) Prediction-Processing Framework, and (6) Antagonistic Neural Networks Perspective. Second, the propositions are stipulated. The chapter closes with conclusions introducing the 'Particular Empirical Part'.

'Particular Empirical Part' frames the objective, design and boundaries of the single case study of the 'digital transformation' of one of Europe's oldest and leading media companies, Switzerland's Ringier AG ('Ringier'). Qualitative content analysis and sensemaking methodology are introduced as method and methodology and the variables (dependent, independent, and control/moderators) are developed. The concluding chapter of the Empirical Part is dedicated to a detailed discussion and analysis of the results and introduces the final part 'Conclusions'.

'Conclusions' closes with recommendations for action, directions for future research, limitations and, ultimately, a final conclusion and critical assessment of this dissertation.

1.5 Research method

‘Free-energy minimization’ and dynamic board capabilities underpinning the firm’s capacity for continuous strategic renewal are difficult or impossible to capture in a quantitative analysis. This is in particular true for this dissertation, which rejects stereotypes as an acceptable measure of approximation.

Ringier, one of Europe’s leading media companies, is broadly recognized as a case of successful strategic renewal in form of digital transformation, as measured in the consistent growth of the digital-related EBITDA since 2008. A single case study in form of open-style/semi-structured interviews with members of Ringier’s Upper Echelon (Chairman and majority owner; members of the board of directors; CEO and CFO) forms the basis of the empirical study.

Philipp Mayring’s (2015) qualitative content analysis is applied as a qualitative method analyzing the interview contents through coding and categorization. Dervin’s sense-making methodology (Dervin et al., 2003) complements the qualitative content analysis. Foreman-Wernet (2003) summarizes the essence of the sensemaking-methodology and its very purpose for this study:

> *Looking through the “situational logic to how people construct sense” by way of ‘situation-defining communication strategies and tactics’, “designed for transmission rather than dialogue”, and where the “human condition is seen either as internally driven by individual human agency or determined by external forces beyond the individual’s control”, therefore recognizing “the utter impossibility of separating the inner and outer worlds of human existence”. (Foreman-Wernet, 2003: 6-7)*

Measures for achieving trustworthiness are established through quality criteria (Table 8).

1.6 Boundaries

This dissertation is dedicated to the ***firm-level***. An ***economic perspective*** focusing on industry structure and clockspeed[64] as well as the specifics of governance systems[65] have not been considered.

However, a high degree of interdependence amongst industry-, firm- and Upper Echelon-levels calls nonetheless for an integrative multi-level approach. Nadkarni and Barr (2008) linked industry structure and managerial cognition through 'industry velocity'[66], proposing "that as top managers make sense of, learn from, and address the unique cognitive challenges embedded in the velocity of their operating environments, they will develop specific attention focus and causal logics about their environments." (Nadkarni and Barr, 2008: 1397)

Industry velocity as a distinctive independent variable, however, has increasingly lost in relevance as fast-paced discontinuity is the new norm - independent of industrial sector, firm lifecycle and size. Upper Echelon's demographics, path-dependency[67], and

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[64] "Fines (1998) introduced the concept of industry clockspeed to capture the rate of industry change driven by endogenous factors (technological and competitive). He identified three facets of industry clockspeed: product, process, and organizational." (Nadkarni and Narayanan, 2007: 244).

[65] There is no universal governance model. The role of the board does vary as a function of culture, laws, and ownership structure (public, private - private equity, family, or a combination thereof). While in Switzerland the board's strategic mandate is law-imposed, in other jurisdictions there are limits to what can or should be expected from the board of directors. Across the world, nonetheless, lawmakers are increasingly challenged to keep corporate governance guidelines 'in tune' with the requirements of a distributed and discontinuous environment.

[66] Nadkarni and Barr, 2008: "**Industry velocity affects the attention focus and causal logics that top managers develop about their environments, which, in turn, drive the speed of strategic actions**. This pattern is consistent with the cognitive explanation of strategic actions, which suggests that incumbent firms enact their environments. However, contrary to prior empirical research on cognition, which only assumes or implies a link between environment and cognition, these results highlight **how industry context influences managerial cognition**. Our results provide explicit evidence that industry forces significantly and directly influence the cognition process by **shaping the attention focus and causal logics that managers use to make sense of and act within the environment**. Thus, both industry and cognition variables are critical in developing a comprehensive explanation of strategic action." (p. 1417; emphasis by DBK)

[67] In this context, Acharya et al. (2013; emphasis by DBK) provide a meaningful insight on the back of their study on private equity governance performance: "**General partners who are ex-consultants or ex–industry managers are associated with outperforming deals focused on internal value-creation programs, and ex-bankers or ex-accountants with outperforming deals involving significant mergers and acquisitions.** The findings suggest the presence, on average, of positive but heterogeneous skills at the deal-partner level in large private equity transactions." (p. 368) This finding highlights the importance of linking board capabilities as well as team composition to a firm's balancing act of financial vs. strategic control.

governance orientation[68] are critical to top-down prediction models and predictions but have not been further elaborated.

This dissertation treats the ***firm-level*** in several aspects rather as a black-box and has given no consideration to a firm's diversification strategy, size, and structural divisionalization: "the dynamics and performance implications of the environment-organization interface"[69] (Keats and Hitt, 1988: 570) have not been considered. In particular, in the case of Ringier – a highly diversified media company, which expanded internationally and in terms of business verticals through M&A and joint-venturing - the firm-level does require a more detailed consideration. Indeed, unless we open the black-box we may not understand whether Ringier is really in power to effectuate Free-Energy Governance since many of Ringier's joint-ventures are beyond its Upper Echelon's very governance control.

Concerning specifically the degree of firm-level diversification, the study of Hoskisson and Hitt (1988) is of particular interest as this dissertation attempts developing optimizing the balance between synergy-seeking (*strategic control*) and diversification-based hedging (*financial control*) strategies as a critical dynamic board capability: "the market evaluates R&D investment more positively for firms that are organized to seek synergy than for those that are organized to pursue a hedging (or diversification) strategy." (Hoskisson and Hitt, 1988: 605) While Ringier can be considered less of a synergy-seeking and more of a diversification-based and hedging-oriented holding company, the level and nature of Ringier's R&D investment have not been analyzed[70] and this represents an important boundary.

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[68] See Kwee, Z., Van den Bosch, F.A.J., Volberda, H. 2011. **The influence of top management team's corporate governance orientation on strategic renewal trajectories: a longitudinal analysis of Royal Dutch Shell plc**, **1907–2004**. Journal of Management Studies, 48: 984–1014.

[69] "The dynamics and performance implications of the environment-organization interface are important topics of investigation in both the organization theory and strategic management literatures". (Keats and Hitt, 1988: 570)

[70] "Because the control systems associated with the highly diversified **M-form firms** lead to a focus on short-term efficiency and risk avoidance, it is hypothesized that less diversified firms with U-form structures will invest relatively more in R&D than M-form firms. Further, **highly diversified firms have lower strategic control** of their various businesses and are not as likely to seek synergies among these businesses. Because top managers of highly diversified businesses do not have strong operational knowledge of their portfolio of businesses, it is hypothesized that these managers **invest relatively less in R&D** than in firms that are not as diversified. Finally, highly diversified firms use strategic control systems that are better **designed to pursue hedging than synergy**. As such, it is hypothesized that investment in R&D by highly diversified firms will not be evaluated as positively by the external capital market as it will be for less diversified firms." (Hoskisson and Hitt, 1988: 606; emphasis by DBK) See also Hoskisson and Hitt (1994).

This dissertation does not address the ***horizontal (or lateral) hierarchical layer***. It is treated as a black box. Floyd and Lane (2010) have emphasized the importance of middle management in initiating strategic renewal. Orgland (1997: 31) developed a strategic change matrix specifying three 'forces for change': (1) *top-down direction setting*, (2) *horizontal process redesign*, and (3) *bottom-up performance improvement*. In fact, Orgland's horizontal process redesign is not limited to the firm-hierarchy's 'middle'-layer: "A combination of top-down and bottom-up change holds the promise of obtaining their respective benefits while minimizing their disadvantages. In the words of Pascale: 'Change flourishes in a 'sandwich'. When there is consensus above and pressure below, things happen'". (Orgland, 1997: 30) In fact, horizontal process redesign as defined by Orgland is of relevance to every layer of the firm's hierarchy. This is equally true for Free-Energy Governance.

Top-down/bottom-up prediction-error minimization is to occur at every hierarchical layer of the organization. In the absence thereof, the flow of error messages is compromised. Therefore, this dissertation does not attach any distinct importance to the lateral dimension other than top-down/bottom-up prediction-error minimization that may and should occur within each and every layer. This dissertation's focus is on firm-level sensing and sensemaking capabilities empowering Upper Echelon (decision-making) prediction models to be challenged by bottom-up (middle- and field-level) stimuli in pursuit of prediction-error minimization, minimizing surprise.

Further, no consideration has been given to ***corporate entrepreneurship***[71]. Indeed, in a world that is increasingly discontinuous and distributed, identifying the right model for transformative and open innovation is critical to firm survival. Barringer and Bluedorn (1999) identified a positive correlation between *corporate entrepreneurship intensity*

[71] Wolcott, R.C. and Lippitz, M.J. 2007. **The four models of corporate entrepreneurship**. MIT Sloan Management Review, 49: 75–82: "**Clearly, what works for one company will not necessarily work for another**. Through our research, we have identified two dimensions under the direct control of management that consistently differentiate how companies approach corporate entrepreneurship. The first dimension is organizational ownership: Who, if anyone, within the organization has primary ownership for the creation of new businesses? (Note: Responsibility and accountability for new business creation might be focused in a designated group or groups, or it might be diffused across the organization.) The second is resource authority: Is there a dedicated "pot of money" allocated to corporate entrepreneurship, or are new business concepts funded in an ad hoc manner through divisional or corporate budgets or "slush funds?" Together the two dimensions generate a matrix with four dominant models (see "Four Models"): **the opportunist** (diffused ownership and ad hoc resource allocation); **the enabler** (diffused ownership and dedicated resources); **the advocate** (focused ownership and ad hoc resource allocation); and the **producer** (focused ownership and dedicated resources). Each model represents a distinct way of fostering corporate entrepreneurship." (p.76; emphasis by DBK)

and certain strategic management practices such as scanning intensity, planning flexibility, and planning horizon.[72]

Free-Energy Governance's triplet of structure, cognition, and capabilities has the potential to fundamentally redirect future research concerning corporate entrepreneurship as well as transformative and open innovation – shaping a firm's evolution[73] and determining firm survival. Indeed, the objective must be to develop more 'holistic explanations of strategic action' (Nadkarni and Barr, 2008: 1395).

This dissertation does not position itself within the conversation of the ***sensemaking perspective***. While its 'founder' Karl Weick is duly credited with advancing the study of *organizing* from the 'rational system model's' emphasis on formal structure to a processual (behavioral and cognitive) orientation, 'sensemaking perspective' falls short at the organizational level by focusing too heavily on 'episodic outcomes' rather than providing an episode-independent organizing framework. A cross-hierarchical design linking Upper Echelon, middle-management, and field management is essential to enact environment and purpose as 'shared meaning' and 'shared expectations' as a basis for firm performance and survival. Therefore, sensing, sensemaking, and enactment are not strictly applied in 'conformity' with the ***sensemaking perspective***[74]**.**

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[72] Barringer, B.R. and Bluedorn, A.C. 1999. **The relationship between corporate entrepreneurship and strategic management**. Strategic Management Journal, 20: 421-444: "A high level of environmental scanning is congruent with the entrepreneurial process (Miller, 1983; Stevenson and Jarrillo-Mossi, 1986; Zahra, 1991). Recall that entrepreneurial firms are innovative, risk-taking, and proactive; and a central theme of the innovation literature is that **information gathering and analysis is critical to the development and maintenance of successful innovation strategies** (Covin, 1991; Kanter, 1988; Zumd, 1983)...Scanning also facilitates the risk-taking and proactiveness dimensions of entrepreneurial behavior. **As a means of partial uncertainty absorption, scanning may lower the perception of risk** associated with a potential entrepreneurial venture, increasing the likelihood that the firm will engage in the venture. Entrepreneurial managers may also realize that scanning is their bridge to remaining competitive… **an intensive scanning regime, complemented by a short planning horizon and a flexible planning system, is a practical approach for entrepreneurial firms**." (p.423; emphasis by DBK)

[73] Romanelli and Tushman outlined three basic models of organizational evolution: "(1) **an inertial model**, which emphasizes constraints on evolution imposed by early patterns of exchange; (2) **an external control model**, which posits change in organizational activities that is guided by changes in environmental conditions over time; and (3) **a strategic management model**, which emphasizes the role of senior executives in choosing patterns and domains of competitive activity." (p. 608; emphasis by DBK); Romanelli, E. and Tushman, M.L. 1986. Inertia, environments, and strategic choice: a quasi-experimental design for comparative-longitudinal research. Management Science, 32: 608-621.
The three models are mutually non-exclusive and represent dimensions that are variably relevant throughout a firm's lifecycle. However, the view that environment is exogenously given and something to adapt to is incompatible with this dissertation's core assumption: i.e., the world is decentralized and discontinuous and environmental enactment and sensemaking capabilities increasingly determine firm the sustainability of strategic renewal and, hence, survival.

[74]"In other words, we need to pay close attention to the historically shaped identity and habitual responses of embodied actors, and to **the process through which actors' interactive coupling with others and the world at large brings forth significance in a meaningful relational domain. This is the conceptual**

"Process research is about the becoming and not the being of strategy; the how as opposed to the what."[75] The specific ***contents of strategy*** are not considered as a unit of analysis and are, therefore, of no interest. A consideration for strategy content would be rather retrospective. *This dissertation is firmly focused on the 'process design variables' that determine 'becoming', inviting Upper Echelon to develop a heightened sensitivity to the risk of firm survival and how to mitigate that risk through cross-hierarchical generative sensing and sensemaking.*

Cognitive capabilities are primarily situated at the individual-level, but strategic action as well as hypothesis-testing (Dong et al., 2016) are a firm-level phenomenon. This dissertation is interested in developing a framework that explains firm survival through the linkage of structure (in terms of cross-hierarchical interactions and *recognition density*) and cognitive capabilities. However, the ***developmental paths of capabilities*** are not addressed.[76] Indeed, the "ways in which firm capabilities emerge, develop, and change over time, and the resulting effects on firm performance" (Helfat, 2000: 955) have been disregarded.[77]

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challenge for sensemaking research, if the holistic and relational nature of sensemaking is to be preserved." (Sandberg and Tsoukas, 2015: S23; emphasis by DBK) Free-Energy Governance is the answer to this conceptual challenge.

[75]Lechner, C. 2005. A primer to strategy process research. Göttingen: Cuvilier Verlag (p.9)

[76]"Capabilities' path-dependent attributes have long been linked to bounded rationality (Simon 1955). Because individuals can consciously process only a limited amount of information, much behavior in organizations rests not on calculative rationality, but instead, on rules (March et al. 2000) and routines (Nelson and Winter 1982), highly tacit and repetitive "chunks" of coordinated activity that are taken as a primitive in the definition of capability (Cohen et al. 1996). Both experimental and field-based evidence support this proposition by showing that gradually evolving routinized behavior can lead to high competence in complex decision settings (Cohen and Bacdayan 1996, Narduzzo et al. 2000)." (Gavetti, 2005: 600) See also: Helfat, C. E. 2003. The SMS Blackwell Handbook of Organizational Capabilities: Emergence, development and change. New York: Blackwell; Helfat, C. E. and Peteraf, M. A. 2003. The dynamic resource-based view: capability lifecycles. Strategic Management Journal, 24, 997–1010; Laamanen, T. and Wallin, J. 2009. **Cognitive Dynamics of Capability Development Paths**. Journal of Management Studies, 46: 950-981

[77]If "cognition is 'situated' (Dearborn and Simon 1958) and **thinking and interpreting depend on the actor's position within the hierarchy, then different organizational arrangements might affect capability development in profoundly different ways** (Burgelman, 1988). For instance, the intensity of decision premises (Simon 1976, Ocasio 1997) or, more broadly, **the strength of influence from the top, may differ widely across organizations**, with relevant consequences on what beliefs affect search and the evolution of capabilities." (Gavetti, 2005: 600; emphasis by DBK)

Cognitive heuristics[78], a form of 'cognitive simplication'[79] (Schwenk, 1988: 42) or so-called 'simple rules that strategists learn from process experience' have formed an important stream within strategy research.[80] The importance of 'rules of thumb' and 'common sense', reinforced by experience (repeated games), cannot be ignored in designing and executing strategic renewal. However, in environments characterized by increasing levels of complexity and uncertainty, in particular, due to an absence of any *prior*, the effectiveness of heuristics (generated from 'repeated games' experience) may be limited.

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[78] "Extensive lists of heuristics and biases have already been developed and examples can be found in reviews by Hogarth (1980); Hogarth and Makridakis (1981); Slovic, Fischhoff, and Lichtenstein (1977); Taylor (1975) and Tversky and Kahneman (1974). Researchers have identified a number of heuristics or 'rules of thumb' which decision-makers use to simplify complex problems and a number of decisional biases which may have an impact on strategic decisions. Tversky and Kahneman (1974), and other behavioural decision theorists have pointed out that the heuristics may provide efficient short cuts in processing information. As Tversky and Kahneman (1974, p. 1125) state, 'in general, these heuristics are quite useful, but sometimes they lead to severe and systematic error'. Probably the most complete list of biases is provided by Hogarth (1980, pp. 166-70) who describes 29 separate biases." (Schwenk, 1988: 43)

[79] "The established narrative attributes heuristic use to humans' inability to reason according to the complex [Nash Equilibrium]." (Spiliopoulos, L. and Hertwig, R. 2020. **A map of ecologically rational heuristics for uncertain strategic worlds.** Psychological Review, 127: 245-280; p. 267) "Our results **challenge the common wisdom that social complexity necessitates cognitive complexity** (e.g., Humphrey, 1976, 1988; Whiten & Byrne, 1988; but see Hertwig & Herzog, 2009) because of the additional uncertainty introduced by strategic intentions. We extended similar findings from the repeated games literature, where simple strategies such as tit-for-tat or win–stay, lose–shift perform remarkably well, to the one-shot game literature." (p. 268; emphasis by DBK)

[80] Bingham, C. and Eisenhardt, K. 2011. **Rational heuristics: the simple rules that strategists learn from process experience**. Strategic Management Journal, 32: 1437-1464: "Overall, we find that firms explicitly learn heuristics as they begin their process experience. But since heuristics are often seen as dysfunctional (Busenitz and Barney, 1997; Carlson and Shu, 2007; Kahneman and Tversky, 1973; Holcomb et al., 2009), it is important to clarify why firms learn heuristics. One reason may be that heuristics are useful when time is short, information is limited, and the situation is novel (Newell and Simon, 1972). Heuristics speed action by requiring less information and simplifying cognitive processes... A subtler reason firms may learn heuristics is that they are often surprisingly accurate. Research on 'fast and frugal' heuristics (Gigerenzer and Brighton, 2009; Goldstein and Gigerenzer, 2009) finds that simple heuristics can outperform analytically complicated and information-intensive approaches even when information and time are available." (p. 1449)

"Overall, we contribute to the psychological foundations of strategy by clarifying that **heuristics are central to strategy**: (1) heuristics are **'rational,' especially in unpredictable markets**; (2) capability creation involves the **transition of novice to expert heuristics**; and (3) **simplification cycling of heuristics portfolios is a key dynamic capability**, enabling firms to poise at the 'edge of chaos.'" (Bingham and Eisenhardt, 2011: 1459-60; emphasis by DBK)

Kahneman and Tversky's work has been foundational: Kahneman, D. and Tversky, A. 1973. **On the psychology of prediction**. Psychological Review, 80: 237-52: "In making predictions and judgments under uncertainty, people do not appear to follow the calculus of chance or the statistical theory of prediction. Instead, they rely on a limited number of heuristics which sometimes yield reasonable judgments and sometimes lead to severe and systematic errors." (p. 237); Tversky, A., and Kahneman, D. 1974. **Judgment under uncertainty: Heuristics and biases**. Science, 185, 1124–1131

"The interaction of strategic uncertainty and incomplete information makes for a particularly unpredictable game, especially if there is no relevant historical prior incident to refer to. In repeated games, there are various ways to reduce the degree of strategic uncertainty… Many important real-world decisions are either one-shot games or strategic situations that are so rare that very little prior information exists to reduce uncertainty… ***How can players resolve, reduce, or otherwise handle the various kinds of uncertainty involved in strategic one-shot interactions, which do not afford the opportunity for learning?"*** (Spiliopoulos, L. and Hertwig, R., 2020: 246; emphasis by DBK)[81]

This dissertation is neither interested in rules-based nor top-down cognitive simplication but considers *generative* processes of top-down/bottom-up hypothesis-testing (i.e. prediction-error-minimization) as indispensable to systematically navigate a discontinuous world. Heuristics – no matter how well-trained – are considered to be a rather sub-optimal *process* (or strategy) to successfully '*surf uncertainty'* (Clark, 2016). In fact, heuristics rather *tame*[82] uncertainty.

Heuristics reinforce pattern-recognition and tend to disregard dissonant bottom-up stimuli as noise[83]. More importantly, in the socially interactive sphere (where it eventually all plays out) the usefulness of heuristics to strategy formulation must be questioned[84]. Finally, heuristics are fundamentally anchored in a worldview of

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[81] Free-energy-principle-based surprise-minimization is the answer. See Raviv, S. December 2018. The genius neuroscientist who might hold the key to true AI. Wired Magazine (copied on January 5, 2020: https://www.wired.com/story/karl-friston-free-energy-principle-artificial-intelligence/; emphasis by DBK)

[82] Hertwig, R., Pleskac, T.J., and Pachur, T. 2019. **Taming uncertainty**. Cambridge, MA: MIT Press: "In our view, adaptive intelligence in an uncertain world arises from a variety of simple tools. We focus on three types: first decision strategies that effectively permit people to infer and decide based on limited information by cleverly making use of key regularities in the environment; second, flexible search processes that guide where to look for further information and, importantly, when to stop searching and when to act; and, third, cognitive tools that help people respond to the opportunities and challenges presented by others… We argue that these tools empower the human mind with what the poet John Keats (1891) called '**negative capability**' – **the ability to survive and thrive in uncertainty**." (Preface: xii-xii; emphasis by DBK)

[83] "Each heuristic's policy represents a wager on the structure of the environment in question; **it bets that ignoring some of the (often noisy) available information will enable faster, and potentially even more accurate, decisions**." (Hertwig, R., Pleskac, T.J., and Pachur, T. 2019. Taming uncertainty. Cambridge, MA: MIT Press: p.8; emphasis by DBK)

[84] "One important objection to these findings has been that all or most model competitions involved heuristics that concern individual decision making; thus, leaving open the question of whether their success would generalize to strategic situations in the social world. There are certainly grounds for doubt. The philosopher Sterelny (2003), for instance, argued that **simple heuristics—despite reaching surprisingly high levels of accuracy in nonsocial worlds—will fail in interactions with other intelligent (and especially competitive) agents**. '*For it is precisely in such situations that simple rules of thumb will go wrong*...." (Spiliopoulos, L. and Hertwig, R., 2020: 246; emphasis by DBK)

environmental adaptation rather than enactment, i.e. uncertainty is rather treated as a matter of adaptation to an exogenously determined 'game'. This dissertation rejects environmental adaptation as a viable survival strategy in a perpetually discontinuous (*one-shot-interactions*) environment.

Cognitive maps[85] are closely related to heuristics (Schwenk, 1988) and can be considered a potent form of visualizing sensemaking. Hodgkinson et al. (2004) define causal (cognitive) mapping as "a family of procedures designed for eliciting and representing systematically actors' causal beliefs concerning a particular issue or event."[86] Huff and Fiol (1992) emphasize cognitive mapping's analogy to geographic maps[87]: "While cognitive research shows that people do use map-like structures to make sense of information (Lakoff, 1987; Neisser, 1987; Sowa, 1984), many of these maps are in the form of ingrained and taken-for-granted assumptions, and thus are hidden even from those who use them. Research on cognitive mapping has attempted to make these structures more visible (Huff, 1990). In addition, those interested in cognition in organizational settings have worked to elicit the structures that are shared among individuals." (Fiol and Huff, 1992: 268[88])

According to Weick and Bougon (1986: 102), "organizations exist largely in the mind, and their existence takes the form of cognitive maps. Thus, what ties an organization together is what ties thoughts together." Free-Energy Governance (FEG) is precisely concerned with the "tying of thoughts" in form of circular causality underlying the

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[85] "The term '**cognitive map**' was first used by Tolman (1948) in discussions of learning in laboratory animals and human beings. These cognitive maps consist of concepts about aspects of the decision environment and beliefs about cause-and-effect relationships between them. Such maps serve as interpretive lenses which help decision-makers select certain aspects of an issue as important for diagnosis… they may be used to represent shared assumptions among a group of strategic decision-makers which makes them useful in the study of strategic problem formulation. (Schwenk, 1988: 45; emphasis by DBK) "**A cognitive map approach to organizations begins with the recognition that participants edit their own organizational experience into patterns of personal knowledge**." (Weick and Bougon, 1986: 106; emphasis by DBK)

[86] Hodgkinson, G. P., Maule, J. and Bown, N. J. 2004. Causal cognitive mapping in the organizational strategy field: a comparison of alternative elicitation procedures. Organizational Research Methods, 7: 3-26

[87] "Cognitive maps are graphic representations that locate people in relation to their information environments. Maps provide a frame of reference for what is known and believed. They highlight some information and fail to include other information, either because it is deemed less important, or because it is not known. They exhibit the reasoning behind purposeful actions. Cognitive maps are of potential interest to managers because they are a means of displaying graphically the firm's current strategic position, as various observers understand it, and because they hold the promise of identifying alternative routes to improving that position." (Fiol, M.C. and Huff, A.S. 1992. **Maps for managers: Where are we? Where do we go from here?** Journal of Management Studies, 29:267-285; 267)

[88] Fiol, M.C. and Huff, A.S. 1992. Maps for managers: Where are we? Where do we go from here? Journal of Management Studies, 29:267-285

cognitive coupling of governance and operational channels by way of top-down predictions being generatively challenged by bottom-up (field) stimuli in pursuit of surprise-minimization.

Hence, the power of maps should not be underestimated. However, for the purposes of this dissertation ***cognitive mapping*** has not been considered - not as a method, not as a metaphor, not as a form of visualization - for precisely three reasons: (1) This dissertation is not interested in the content but the process dimension of strategy formulation. Why a certain cognition led to particular actions is not the unit of analysis. (2) In the context of a Free-Energy Governance framework any cognitive mapping is incomplete and rather useless unless the circular causality of top-down predictions and bottom-up stimuli can be dynamically mapped. Mapping only Upper Echelon's cognition is incomplete.[89]. (3) Cognitive mapping is a form of explanatory rather than design 'science'. It is more hindsight- than foresight-oriented. **This dissertation is not interested in 'what was' or 'what is' but which form of hierarchical coupling, cognitive disposition as well as cognitive capabilities are together essential to successfully navigating discontinuity in pursuit of *becoming*, i.e. securing firm survival.**

More importantly, the question arises what utility cognitive maps serve in highly dynamic and discontinuous environments: there is a risk that obsoleteness is innate to the process of mapping. Finally, one must question whether cognitive mapping is inherently flawed. Nisbett and Wilson (1977: 102) reviewed evidence suggesting "that there may be little or no direct introspective access to higher order cognitive processes. Subjects are sometimes (a) unaware of the existence of a stimulus that importantly influenced a response, (b) unaware of the existence of the response, and (c) unaware that the stimulus has affected the response. It is proposed that when people attempt to report on their cognitive processes, that is, on the processes mediating the effects of a stimulus on a response, they do not do so on the basis of any true introspection. Instead, their reports are based on a priori, implicit causal theories, or judgments about the extent to which a particular stimulus is a plausible cause of a given response."[90] What really matters is the empowerment of generative processes fertilizing circular causality

[89] Wood, D. 1992. **The power of maps**. New York City: The Guilford Press: "The map's effectiveness is a consequence of the *selectivity* with which it brings this past to bear on the present. This selectivity, this focus, this particular attention, this… *interest*… is what frees the map to be a representation of the past… This is to say that maps work…by serving interests. Because these interests select what from the vast storehouse of knowledge about the earth the map will represent, **these interests are embodied in the map as presences and absences**." (p. 1; bold emphasis by DBK)

[90] Nisbett, R. E., and Wilson, T. D. 1977. **Telling more than we can know: verbal reports on mental processes.** Psychological Review, 84: 231-259

between top-down predictions and bottom-up stimuli fueled by one simple objective: surprise-minimization. This is what this dissertation is dedicated to.

Embodied cognition (EC) and the ***emotional significance of stimuli*** are gaining momentum in cognitive science: the brain is not the only cognitive resource, but body and environment together with brain form one integrated cognitive (embodied) system. While the Prediction-Processing framework (PPF) is rooted in a number of EC's core assumptions, this dissertation does not address the relevance of EC to strategy process research[91]. Advances in neuroscience generally and neurobiology in particular start laying the foundation for developing models of sensing and sensemaking[92] conditioned by neuro-hormones (in particular dopamine[93] and cortisol) and resulting emotive dimensions. For a critical review of EC see Goldinger et al. (2016).[94]

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[91] O'Malley et al. were amongst the first to connect embodied cognition and sensemaking theory in management research: O'Malley, A.L., Ritchie, S.A., Lord, R.G, Gregory, J.B. and Young, C. M. 2009. **Incorporating Embodied Cognition into Sensemaking Theory**: A Theoretical Examination of Embodied Processes in a Leadership Context. in Rahim, A. et al. (Eds.). Current Topics in Management. Center for Advanced Studies in Management, 14: 151-181. "We contend that examining sensemaking from an embodied cognition perspective affords insight into how organization members utilize multiple modalities within their physical environment to arrive upon meaning (Smith, 2005). By expanding our view of cognition to include its embodied components, we hope to shed light on the mechanics of a "largely invisible, taken-for-granted social process that is woven into communication and activity" (Weick et al., 2005, p. 417) and eliminate some of the "vagueness and indeterminacy" of sensemaking (Weick, 1995, p. 51). **Presently, the sensemaking literature lacks explicit attention to the mechanisms by which leaders impart sense to followers**. As a result, there is little guidance available to leaders concerning how they may hone their sensemaking efforts. We contend that incorporating embodied cognition principles enhances the utility of the sensemaking literature for organizational leaders." (p. 153; emphasis by DBK) "**Embodied responses are not merely automatic responses to social stimuli; rather, they constitute potent stimuli in themselves** (Barsalou et al., 2003) … In a study linking head movements to affective states (Wells & Petty, 1980) … participants' bodily movements shaped their preferences (Ping, Dhillon, & Beilock, 2009) … **Unbeknownst to participants, their bodily states guided their judgments**." (p. 158; emphasis by DBK)

[92] Some scholars have advanced the application of functional magnetic resonance imaging (fMRI) to the study of strategic decision-making. While this is potentially a promising new direction, it is still too early a stage to judge the relevance of fMRI to the field of strategic management. More importantly, the study of strategic renewal is rather retrospective than real-time. See Laureiro-Martinez, D., Venkatraman, V., Cappa, S., Zollo, M. and Brusoni, S. 2015. **Cognitive Neurosciences and Strategic Management: Challenges and Opportunities in Tying the Knot**, in Gavetti, G. and Ocasio, W. (ed.). Cognition and Strategy (Advances in Strategic Management, Volume 32). Emerald Group Publishing: 351-370.

[93] "**When there is a mismatch between your expectation and your reality, this midbrain dopamine system broadcasts a signal that reevaluates the price point**. This signal tells the rest of the system whether things turned out better than expected (an increased burst of dopamine) or worse (a decrease in dopamine). That prediction error signal allows the rest of the brain to adjust its expectations to try to be closer to reality next time. **The dopamine acts as an error corrector**." (Eagleman, 2017: 128; emphasis by DBK)

[94] Goldinger, S.D., Hansen, W.A., Papesh, M.H., Barnhart, A.S. and Hout, M.C. 2016. **The poverty of embodied cognition.** Psychonomic Bulletin & Review, 23: 959–978: "In recent years, there has been rapidly growing interest in embodied cognition, a multifaceted theoretical proposition that (1) cognitive processes are influenced by the body, (2) cognition exists in the service of action, (3) cognition is situated in the environment, and (4) cognition may occur without internal representations. Many proponents view

Coates (2012) has successfully leveraged the neurobiological dynamics at the individual level for a better understanding of the outcomes at a systemic level (i.e., financial markets). Indeed, neurobiology (and neuro-hormones) at the board level cannot be disregarded as an important variable determining whether stimuli are embraced as threat, opportunity or are ignored altogether. "For instance, high anxiety might narrow attention to a subset of events, whereas an overoptimistic mood might lead to a neglect of certain signals". (Hodgkinson and Healey, 2011: 1503-4) For the purposes of this dissertation, perhaps rather restrictively, firm-level sensing and sensemaking is treated as 'affect-free'.[95]

Tension amongst competing, opposing, and potentially contradictory[96] organizational-level objectives and logics is real. However, the ***strategic paradox perspective*** (Lewis and Smith 2011; Lewis, 2014) has been rejected (Putnam et al., 2016)[97]. Indeed, dichotomies underlying the specific dynamic board capabilities advanced in this dissertation, are typically embraced by the strategic paradox perspective as paradox rather than duality[98]: *(1) environmental co-creation vs. co-alignment, (2) exploitation*

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embodied cognition as the next great paradigm shift for cognitive science." (959) "We also argue that the principles of EC are often (1) co-opted from other sources, such as evolution; (2) vague, such that model building is not feasible; (3) trivially true, offering little new insight; and, occasionally, (4) nonsensical." (p. 961)

[95]"**The predominance of the information processing view of the firm has ensured that current conceptions of sensing capabilities are decidedly affect free**… However, to the extent that affect controls attention (Compton, 2003), the moods and emotions of managers likely determine to a significant degree what the firm attends to and how it responds, to say nothing of the emotional significance of the stimuli for the individuals concerned."(Hodgkinson and Healey, 2011: 1503-4; emphasis by DBK)

"**Anxiety and overoptimistic moods** may induce managers to attend to certain stimuli and neglect others. **Executives who explicitly recognize emotional mechanisms will develop superior sensing opportunities** compared to executives who neglect the role of emotions." (Dong et al., 2016: 101; emphasis by DBK)

[96] Putnam et al. (2016: 70, Table 1) define **contradiction** as "bipolar opposites that are mutually exclusive and interdependent such that the opposites define and potentially negate each other."

[97]"Over two decades have passed since Handy (1994) noted that the phrase, 'It's a paradox,' had become a management cliché for describing opposing forces in complex organizational environments. For Handy, the phrase was overused and underspecified; but it typified a fact of life, that is, **contradiction and paradox are the "new normal" in this volatile, rapidly changing landscape of organizations** (Ashcraft & Trethewey, 2004)." (Putnam et al., 2016: 66) "As a result, the research on paradox and its related terms, tensions, contradictions, and dialectics, has become so dominant in the organizational landscape that it is difficult to use any other words than "paradigmatic" and "pervasive" to describe the work (Ashcraft & Trethewey, 2004; Engeström & Sannino, 2011; Lewis & Smith, 2014; Smith & Lewis, 2011). It not only exists in management studies but also in interdisciplinary social sciences writ large, including communication, sociology, psychology, and education." (Putnam et al., 2016: 66)

[98] Putnam et al. (2016: 69, Table 1) define **duality** as "interdependence of opposites in a both/and relationship that is not mutually exclusive or antagonistic": "Two seemingly opposite concepts that are interdependent rather than separate or mutually exclusive (Farjoun, 2010); Dualistic elements that may be interdependent and conceptually distinct, rather than opposed (Sutherland & Smith, 2011); Exploring

vs. exploration, and (3) financial vs. strategic control. But, against the background of a world that is increasingly distributed, discontinuous and inescapably interdependent, persistency in contradiction of interdependent elements – which is the defining core of a paradox[99] - is potentially non-sense and therefore severely limits the theoretical as well as practical relevance of a paradox lens: it is too top-down actor-centric rather than process-oriented, often confuses duality with paradox, and is overall short on generative processes.

Putnam et al. (2016: 67; emphasis by DBK) rightly shift "the locus of paradox and contradiction to discourses, social interaction processes, practices, and ongoing organizational activities rather than actors' cognitions or large-scale systems" and adopt "**a bottom-up view of organizing**, one that focuses on how tensions, contradictions, and dialectics develop as part of actions and interactions." Therefore, this dissertation adopts a dialectic[100] and duality-centric action perspective where firm-level tension between opposing logics are the source of endogenously powered change as well as stability (Farjoun, 2002: 850; Farjoun, 2010)[101]. The goal-directed, action-centric, and generative circular causality of top-down, bottom-up and lateral sensemaking processes

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the links between apparently opposite dimensions through maintaining conceptual distinctions without being committed to rigid antagonism or separation (Jackson, 1999; Smith & Graetz, 2006a); Opposites that exist within a unified whole; internal boundary creates distinction and highlights opposition; external boundary encourages synergies by constructing the unified whole (Smith & Lewis, 2011)".

As opposed to duality, Putnam et al. (2016: 69, Table 1) define **dualism** as the "existence of opposite poles, dichotomies, binary relationships that are able to create tensions, but can be separated". "Dualities emphasize an interdependent relationship between contradictory elements. Drawing from scholars such as Giddens (1984) and Bourdieu (1977), duality scholars stress the interplay between contradictory elements as mutually constituted and ontologically inseparable, such that it would be impossible to describe one without the other (Smith & Graetz, 2006)… **Duality scholars focus on changing, processual, dynamic relationships that remain in a constant state of becoming** (Tsoukas & Chia, 2002)." (Schad et al., 2016: 12; emphasis by DBK)

[99] "We define paradox as contradictory yet interrelated elements that exist simultaneously and persist over time." (Smith and Lewis, 2011: 383) "**We define paradox as persistent contradiction between interdependent elements**. This definition identifies two, core characteristics of paradox: contradiction and interdependence, which together inform the boundaries of paradox to sharpen the lens, while also broadening the tent, linking these studies with other related literatures." (Schad et al., 2016: 10) "Even as paradox involves a dynamic and constantly shifting relationship between alternative poles, **the core elements remain impervious to resolution**." (Schad et al., 2016: 11; emphasis by DBK)

[100] "Paradox scholars diverge from the dialectics tradition when the new synthesis renders the underlying tension obsolete—in dialectics the synthesis meets a newly emerging antithesis, while **the tension in paradox persists**." (Schad et al., 2016: 12; emphasis by DBK)

[101] "The study of the rise and fall of institutions highlights three key issues concerning the nature of social systems and their development patterns: whether order or contest and disorganization is the more common tendency in institutions; whether the roots of institutional transformation are endogenous or exogenous (DiMaggio, 1988; Zucker, 1988); and whether process matters in explaining institutional persistence and change. **The specific context of an emerging and turbulent field underscores the question of whether and how institutions can endure at all when they are continuously faced with change and innovation**." (Farjoun, 2002: 849; emphasis by DBK)

(prediction-error-minimization) form the basis for leveraging opposing logics 'within a unified whole' in form of duality.

It is important to appreciate that many dichotomies that have defined the science and practice of strategic management such as 'firm vs. environment', 'executive leadership vs. non-executive board', 'individual vs. firm', 'exploitation vs. exploration', 'financial control vs. strategic control', 'formal vs. informal channels', and 'flexibility vs. stability', for example, are less and less dichotomist in a distributed and discontinuous world. "Viewed as a duality," for example, "stability and change, while conceptually distinct, are no longer separate but, rather, are interdependent and potentially compatible—mutually enabling and a constituent of one another." (Farjoun, 2010: 205)

Therefore, the board's cognitive capabilities in terms of meta-managing opposing logics gain in importance in the context of continuous strategic renewal. How the board of directors and executive leadership relate to each other and mutually reinforce their respective impact on firm performance and survival is redefined: the traditional governance dichotomy of 'control vs. collaboration' (Sundaramurthy and Lewis, 2003) is, indeed, not a paradox but a duality[102]. In a discontinuous world demanding continuous strategic renewal, the board cannot exercise its (law-imposed) control mandate without being an integral part of the generative process of strategic renewal. This dissertation establishes duality management - such as vacillation (Boumgarden et al., 2012) of exploitation vs. exploration and balancing financial and strategic control (Hitt et al., 1996) - as a dynamic board capability. A paradox lens is rejected.

A systems-approach has been excluded. It must be noted, though, that ***complexity theory and cybernetic perspectives*** can enrich our conversation. In particular complexity theory, which "focuses on the fundamental tradeoff between efficiency and flexibility" and "finding a balance between too much structure and too little, and shifting that balance (and narrowing the range of optimal structures) as environments become more

[102] "Tensions between proponents of control versus collaborative approaches to governance are rising. Debates persist over whether detached outsiders or knowledgeable insiders should dominate boards, whether directors should monitor or empower executives, and whether the board should allow market forces to discipline managerial excess or should protect managers from market abuses (Dalton, Daily, Ellstrand, & Johnson, 1998; Sundaramurthy, 2000; Westphal, 1999). Yet, increasingly, researchers call for understandings that move beyond either/or thinking (e.g., Audia, Locke, & Smith, 2000; Drummond, 1998; Kisfalvi, 2000). According to Demb and Neubauer (1992), rising environmental ambiguity and turbulence demand a more paradoxical approach to governance—an approach that embraces the simultaneous need for control and collaboration." (Sundaramurthy and Lewis, 2003: 397)

unpredictable" (Eisenhardt and Piezunka, 2011: 518)[103] are critical considerations for optimizing recognition density within 'free-energy-principle' inspired organizational governance systems. The ability to understand systemic patterns of change, for example, could potentially be considered a cognitive or dynamic meta-capability. Perspectives of a more systemic nature are worth considering. In particular, autopoiesis or homeostasis are worth considering and re-interpreting in the context of an acceleratingly discontinuous environment. However, at their core, these perspectives are more concerned with environmental adaptation than enactment (i.e. environmental co-creation)[104].

Artificial Intelligence (AI) will continue to be of increasing relevance to the study of corporate governance and strategic decision-making but was not considered. In fact, Friston's 'free-energy principle' is powering machine-learning algorithms[105]: 'surprise-minimization' is a logic in its own right. Artificial intelligence is essentially a challenge of prediction-processing or active inference (*AI*) [106], in pursuit of surprise-minimization.

It will only be a matter of time for machine-learning based tools to assist leadership's sensemaking of data through active inference (*AI*), beyond traditional human

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103 Eisenhardt, K.M. and Piezunka, H. 2011. Complexity theory and corporate strategy, in The SAGE Handbook of Complexity and Management, edited by Allen, P., Maguire, S. and McKelvey, B. pp. 506-523, London, UK: SAGE Publications

104 "The term 'complexity' refers to a specific type of behavior that emerges from complex adaptive systems (CAS)… and not the system itself… Within a CAS, each agent acts autonomously according to specific rules and in response to information received via connections to other nodes and in coevolution with the environment." (Eisenhardt et al., 2011: 508) "**Complexity theory thus calls for a fluid organization with multiple motors of adaptation that enable the firm to coevolve with changing environments**." (Eisenhardt et al., 2011: 507; emphasis by DBK)

105 "The first time I asked Friston about the connection between the free energy principle and artificial intelligence, he predicted that **within five to 10 years, most machine learning would incorporate free energy minimization**. The second time, his response was droll. "Think about why it's called active inference," he said. His straight, sparkly white teeth showed through his smile as he waited for me to follow his wordplay. "Well, it's AI," Friston said. **"So is active inference the new AI? Yes, it's the acronym."** (Raviv, S. December 2018. The genius neuroscientist who might hold the key to true AI. Wired Magazine; copied on January 5, 2020: https://www.wired.com/story/karl-friston-free-energy-principle-artificial-intelligence/; emphasis by DBK)

106 Agrawal, A., Gans, J. and Goldfarb, A. 2018. **Prediction Machines: the simple economics of artificial intelligence**. Boston: Harvard Business School Publishing: "Prediction is the process of filling in missing information. **Prediction takes information you have, often called 'data', and uses it to generate information you don't have**. Much discussion about AI emphasizes the variety of prediction techniques…: classification, clustering, regression, decision trees, Bayesian estimation, neural networks, topological data analysis, deep learning, reinforcement learning, deep reinforcement learning, capsule networks, and so on." (p.13; emphasis by DBK) "Kathryn Howe, of Integrate.ai, **calls the ability to see a problem and reframe it as a prediction problem 'AI Insight'**… Autonomous vehicles could not function outside a highly predictable, controlled environment – until engineers reframed navigation as a prediction problem." (p.14)

sensemaking capabilities. However, as the cost of prediction is lowered, the value of judgement increases and, consequently, human qualities are revalued[107] in relation to machine power: “Machines cannot predict judgement when a situation has not occurred many times in the past.” (Agrawal, 2018: 102)[108]

Fast-forward 3-5 years from the date of this dissertation, it will be rather difficult to conceive of a dissertation that defines companies as ‘prediction-processing-machines’ without giving due consideration to the application of AI-based (and most likely free-energy principle powered) algorithms. Machines will assume an increasingly important role in strategic decision-making and, consequently, the role, value, and developmental path of human cognition will consequently co-evolve.

Hilb (2020) made a valuable contribution to ‘the role of artificial intelligence in shaping the future of corporate governance’. In particular, Hilb’s reference to ‘autopoietic intelligence making corporate governance self-evolve’ deserves to be further explored but is beyond the scope of this dissertation.

While our **“understanding moves from mystery to heuristic to algorithm,** extraneous information is pared away” (Martin, 2009: 12; emphasis by DBK). Indeed, we are challenged to control our innate reflex ‘to master the complexities of the world through simplification’ (Martin, 2009: 13). **To embrace the world beyond one’s very collection of (Bayesian) priors, one must abductively open up to extraneous information as potentially transformative.**

Unless AI adopts the free-energy principle in algorithmic pursuit of surprise-minimization, AI will be rather limited in advancing strategy process in a discontinuous and distributed (non-repeat) world. This dissertation should inspire future research in the area of AI-powered strategic renewal.

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[107] “**Humans have three types of data that machines don’t**. First, human senses are powerful… Second, humans are the ultimate arbiters of our own preferences… Third, privacy concerns restrict the data available to machines.” (Agrawal et al., 2018: 98); "The development of **nonlinear thinking will become more critical as artificial intelligence becomes more advanced**." (Hitt, M.A. 2000. The new frontier: transformation of management for the new millennium. Organizational Dynamics, 28: 6–17; emphasis by DBK)

[108] The **Bayesian prior** is no less important to the predictions-processing framework (PPF), as will be discussed in the General Theoretical Part.

1.7 Definition of key concepts

1.7.1 Sensing and sensemaking

Sensing and sensemaking[109] form one unitary act[110] and together can be considered a non-operational (cognitive) meta-capability (or dynamic capability, Helfat et al., 2007). There is no sensing without sensemaking and vice-versa.

Sensemaking as a framework[111] is deeply indebted to Karl Weick[112] and based on the insight that *sensemaking* and *organizing* are 'mutually constitutive': "I want to understand how the conditions of interdependency associated with organizing affect how people deal with situations where there are too many or too few meanings". (Weick, 2005: 396-97) Weick (1995: 3) stipulates seven properties of sensemaking:

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109 "Sensemaking has many distinct aspects — **comprehending, understanding, explaining, attributing, extrapolating, and predicting**, at least. For example, understanding seems to precede explaining and to require less input; predicting may occur without either understanding or explaining; attributing is a form of explanation that assigns causes. Yet, concrete examples seem to illustrate the commonalities and interdependencies among these processes more than their differences." (Starbuck and Milliken, 1988: 46; emphasis by DBK) "Because sensemaking is so elusive, noticing may be at least as important as sensemaking. Perhaps **sensemaking and noticing interact as complements in effective problem solving: sensemaking focuses on subtleties and interdependencies, whereas noticing picks up major events and gross trends**. Noticing determines whether people even consider responding to environmental events. If events are noticed, people make sense of them; and **if events are not noticed, they are not available for sensemaking**. Thus, it makes a great difference how foregrounds, backgrounds, and adaptation levels adjust to current stimuli and experience. Insofar as people can control these adjustments voluntarily, they can design noticing systems that respond to changes or ignore them, that emphasize some constituencies and deemphasize others, or that integrate many stimuli simultaneously or concentrate on a few stimuli at a time." (Starbuck and Milliken, 1988: 53; emphasis by DBK)

110 "For instance, what people notice becomes input to their sensemaking, and in turn, the sense that people have made appears to influence what the people notice (Goleman, 1985). **Noticing involves a rudimentary form of sensemaking in that noticing requires distinguishing signal from noise**, making crude separations of relevant from irrelevant." (Starbuck and Milliken, 1988: 41; emphasis by DBK)

111 "Although, as Maitlis and Christianson (2014, p. 62) noted, sensemaking, as a particular approach to the study of organizational phenomena, has been variously described as a "theory," a "lens," or a "framework," **here, we follow Weick (1995) and use his term "sensemaking perspective**," which is also consistent with several other writers in the field (e.g., Drazin, Glynn, & Kazanjian, 1999; Schultz & Hernes, 2013; Vaara, 2000)." (Sandberg and Tsoukas, 2015: S6; emphasis by DBK)

112 "It has inspired the advancement of the social-constructionist, interpretative, and phenomenological perspectives in the field (Holt & Sandberg, 2011); has been a **driving force in the emergence of process organization studies** (Hernes & Maitlis, 2010; Langley, Smallman, Tsoukas, & Van de Ven, 2013; Tsoukas & Chia, 2002; Weick, 2010); and has had a noticeable impact on the organizational practice literature (Colville, Waterman, & Weick, 1999; Coutu, 2003; Weick & Sutcliffe, 2001)." (Sandberg and Tsoukas, 2015: S6; emphasis by DBK)

(1) grounded in identity construction[113]; (2) retrospective; (3) enactive of sensible environments; (4) social; (5) ongoing; (6) focused on and by extracted cues; and (7) driven by plausibility rather than accuracy.

Many definitions have been applied to sensing[114] as well as sensemaking: 'symbolic processes of reality construction'; 'retrospective interpretations built during interaction'; and 'bringing meaning into existence so that continued acting is stabilized'. But essentially it is about **being "sensitive to the continuing flow of potentially new stories**." (Karl Weick, 2005: 396; emphasis by DBK) Sensemaking perspective, according to Weick, is "**best treated as a set of heuristics rather than as an algorithm**." Weick (1995: xii, emphasis by DBK) As will be addressed below, this may explain the most significant limitation of Weick's interpretation of sensemaking: it is episodic rather than programmatic.

Environmental enactment as shared meaning (in form of revealing significance in the environment) and sensemaking are inseparably integral to *organizing*: "in his classic *The Social Psychology of Organizing (Weick, 1979)*, Weick argued that organizing is a process in which individuals interactively undertake action (**enactment**), the results of which they subsequently confront as their 'environment', which they then seek to make sense of by retrospectively chopping their lived experiences into meaningful chunks, labeling them, and connecting them (i.e., **selection**). This *sense made* is retained in their minds in the form of cognitive '**cause maps**', indicating what is crucial for carrying out their tasks and how they are interconnected (**retention**). Through sustained interaction, individuals interlock their behaviors over time, and, in so doing, they deal with residual equivocality, which they seek to remove through negotiating a consensus about their common task and how it ought to be handled. Thus, **a group of individuals become organized when their cause maps converge** (Weick, 1979)." (Sandberg and Tsoukas, 2015: S8; emphasis by DBK)

Sensing and sensemaking are firmly rooted in the predictions-processing framework (PPF; Friston, 2010; Clark, 2016)[115], according to which "naturally intelligent systems

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[113] This dimension is of particular interest at the leadership level. Upper Echelon's strategic cognition and actions are generally grounded in the pursuit of 'identity construction.'

[114] Sensing, perceiving, scanning and noticing are applied interchangeably.

[115] According to Swanson (Swanson, L.R. 2016. **The predictive processing paradigm has roots in Kant**. Frontiers in Systems Neuroscience: https://doi.org/10.3389/fnsys.2016.00079), "several core aspects of PP were anticipated by Kant (1996/1787) in his works on perception and cognition. Themes from Kant active in PP include: (1) **the emphasis on "top-down" generation of percepts**; (2) **the role of "hyperpriors"**; (3) **the general function of "generative models"**; (4) the process of "analysis-by-synthesis"; and (5) the crucial role of imagination in perception." Clark (2013: 182: emphasis by DBK)

do not passively await sensory stimulation". (Clark, 2016: 52) But "before an 'input' arrives on the scene, these pro-active cognitive systems are already busy predicting…**all they need to process are sensed deviations from the predicted state**." (Clark, 2016: 52; emphasis by DBK)

Therefore, it is essential that the environmental throughput is neither logic- nor goal-trapped but open: "As Pondy and Mitroff argue, rather than suggesting that organizational systems be protected 'against environmental complexity', we should realize that "**it is precisely the throughput of nonuniformity that preserves the differential structure of an open system**" (1979: 7)." (Scott and Davis, 2007: 95; emphasis by DBK)[116]

Fundamentally, sensemaking is retrospective[117]: "Rationality seems better understood as a postdecision rather than a predecision occurrence. Rationality makes sense of what has been, not of what will be. It is a process of justification in which past deeds are made to appear sensible to the actor himself and to those other persons to whom he feels accountable." (Weick, 1969: 38)[118] In fact, one may say that there is no such thing as a 'pre-decision strategy'.

If strategy is essentially an enacted pursuit of purpose-framed goals[119] followed by top-down generative sensemaking of 'relevant' bottom-up market signals[120]**, then**

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notes: "**Such models follow Helmholtz (1860) in depicting perception as a process of probabilistic, knowledge-driven inference**. From Helmholtz comes the key idea that sensory systems are in the tricky business of inferring sensory causes from their bodily effects."

116 "Organizations continue to exist only if they **maintain a balance between flexibility and stability**." (Weick, 1979: 215; emphasis by DBK) Uncertainty and surprise is not be avoided but to be minimized through action- and hypotheses testing-centric engagement with the world.

117 "The perhaps most counter-intuitive feature of Weickian sensemaking is its retrospective character. Drawing on American pragmatist philosophers such as James and Mead, and European phenomenologists such as Schutz, Weick argued that people can know what they are doing only after they have done it (Weick, 1995, p. 26). This is best captured in Weick's well-known question "**How can I know what I think until I see what I say?**" (Weick, 1979: 133; 1995: 18; 2009: 143)." (Sandberg and Tsoukas, 2015: S8; emphasis by DBK)

118 Quoted in Scott and Davis (2007: 184)

119 What the strategic challenge "means is defined by who I become while dealing with it or what and who I represent. I derive cues as to **what the situation means from the self that feels most appropriate to deal with it, and much less from what is going on out there** (Weick, 1995, p. 24)." (Sandberg and Tsoukas, 2015: S16; emphasis by DBK)

120 "In other words, by undertaking action, which is necessarily grounded on hitherto taken-for granted beliefs, individuals enact their reality, which they, then, retrospectively seek to make sense of and, on the basis of the provisional sense made, individuals act on again, retrospectively making sense of their new action, and so on. It is this **unending dialogue between partly opaque action outcomes and deliberate probing that is at the heart of sensemaking**. As well as sensemaking being retrospective, it is social and **concerned with preserving identity**: **It is influenced by the real or imagined presence of others**

error/surprise-minimization ('free-energy minimization') should be its guiding logic.

On a more operational level, sensemaking's very effectiveness is shaped by three critical dimensions: (a) the **clarity of strategic purpose** and its target model (prediction model and predictions); (b) a **dissonance-centric quest for filtering anomalies** relative to target-model-centric predictions (so called error-minimization or 'free-energy' minimization)[121] while maintaining 'alertness' to non-salient and transient signals that deserve to be revealed as potentially 'significant'; and (c) an **enactivist worldview**: environment is not exogenously pre-determined but is enacted through the social and action-centric construction of shared meaning. "The challenge of sensing capabilities is that their effectiveness relies on the cognitive lens that is used to observe and interpret the world around us. **The fundamental tradeoff is between the uncertainty minimization of deductive and inductive logic that leads to crisp answers about opportunities but can miss the opportunities that are too anomalous or too ambiguous**" (Dong et al., 2016: 102-03; emphasis by DBK)[122] but may well be the very origin of tomorrow's environmental scarcity.

A critical shortcoming of the Weickian sensemaking framework is that it cannot explain how (process) the 'convergence of individual cognitive cause maps' transmorph into the organizational cause map. [123] It remains a black box. Further, the quality of 'sensemaking outcomes' is an issue: "according to [sensemaking perspective], the specific sense produced does not primarily need to be an accurate account of an interrupted activity [for example] but, rather, a plausible account that helps the

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as well as by a person's sense of self. Moreover, **sensemaking is grounded on the ability to bound the continuous flow of human experience**—the ability to put some boundaries around a portion of the flow into which one has been thrown when engaging in an activity or project. It involves **focusing on salient cues of an unfolding situation and developing them into a plausible narrative** for what is going on. As Weick (1995) noted, **sensemaking collapses when identity is unclear**, the social context and cues become ambiguous, retrospect becomes more difficult, ongoing events become resistant to bounding, plausibility is strained, and probing action becomes more constrained." (Sandberg and Tsoukas, 2015: S9; emphasis by DBK)

[121] "**Sense-making starts with the observation, i.e. sensing that 'something does not fit**'. "As anomalies become shared, sensibleness should become stronger." (Weick, 1995: 3)

[122] "First, sensing capabilities rely on a process of beliefs revision as a result of new incoming stimuli. During the process of beliefs revision, conflicting information has an important role, but this role is further affected by emotions." (Dong et al., 2016: 101; see also Coates, 2012)

[123] "**The notion of "process" remains relatively vague**. Some researchers, such as Decker (1998), Gioia and Mehra (1996), Hong-Sang and Brower (2008), Magala (1997), Mills and Weatherbee (2006), and O'Connell (1998), have argued that the actual process of sensemaking remains relatively vague. For example, in a review of Weick's (1995) Sensemaking in Organizations, O'Connell (1998, p. 207) noted that it **lacked details about the actual process of sensemaking** (e.g., "interact," "double interact," and "triple interact")." (Sandberg and Tsoukas, 2015: S19; emphasis by DBK)

sensemaker to create a narrative to act out in order to restore the interrupted activity (Weick, 1995, pp. 55–61).” (Sandberg and Tsoukas, 2015: S15)

The reason for this shortcoming may be that Weickian sensemaking is focused on the social psychological rather than the organizational level and studied only in distinct episodes in view of plausibility rather than embraced as a continuous fabric of firm performance and survival[124].

“*For sensemaking to be seen as an ongoing process, the underlying episodic ontology of sensemaking needs to be replaced with another that sees sensemaking as ubiquitous rather than exceptional*”.[125]

Free-Energy Governance firmly transports the ‘sensemaking loop of forward action and retrospective deliberation’ (Sandberg and Tsoukas, 2015: S9) into an organizational and continuous process/structure of circular causality, cross-hierarchically interlinking top-down predictions and bottom-up stimuli - formally and informally, tacitly and explicitly, and guided by one simple ‘sensemaking’ purpose: error-/surprise-minimization.

In fact, a firm’s sensing and sensemaking capability in terms of ‘social convergence of cognitive maps’ is directly determined by the top-down/bottom-up circular causality of ‘message passing’ and ‘belief propagation’.[126] Unless lower hierarchical (field) levels are purpose-directedly empowered to sense and make sense of less salient, transient but nonetheless transformative signals, the firm’s (cognitive) cause map is likely and sub-optimally directing attention and resources, eventually accentuating a firm’s underperformance and survival-at-risk.

Fundamentally, firm-level sensing and sensemaking, grounded in dissonance theory (Festinger, 1957)[127], is a social process rather than a singular activity, dedicated to

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[124] “Moreover, it should be noted that the heavy emphasis by mainstream [sensemaking perspective] on **studying sensemaking in terms of distinct episodes** (as sensemaking is triggered by particular disruptive events) is **in tension with calls for approaching sensemaking as a “continuous” or “ongoing” process** (Gephart et al., 2010: 281; Maitlis and Christianson, 2014, p. 67; Weick, 2012, p. 146). Although Weick is aware of this tension and emphasizes the need to see sensemaking as “continuous process,” he nonetheless conceives of the latter as a series of several, rapidly moving “distinct episodes” (Weick, 2012, p. 146).” (Sandberg and Tsoukas, 2015: S22; emphasis by DBK).

[125] Sandberg and Tsoukas (2015: S22; emphasis by DBK)

[126] For ‘message passing’ and ‘belief propagation’ or ‘recognition density’ see the Predictions Processing Framework (PPF) in the ‘General Theoretical Part’. The traditional media industry, for example, failed to pick up on the signals and dangers that the creation and early business success of companies such as Google and Facebook could potentially represent.

[127] Festinger, L. 1957. **A theory of cognitive dissonance**. Evanston, IL. Row, Peterson

detecting anomalies. More importantly, "sensing delivers an action-based grip upon the world" (Clark, 2016: 190). Action is at the center of sensing and sensemaking. "**Instead of seeing perception as the control of action, it becomes fruitful to think of action as the control of perception**." (Clark, 2016: 191; emphasis by DBK)

The sensing sensemaker acts upon the environment, and the environment acts upon the sensemaker. "Sensemaking, because it was influenced by dissonance theory, also meant a focus on conflict, affect, motivation, and instability as antecedents of change, rather than the current, more austere focus in cognitive studies on cool formation processing". (Weick, 1995: 12; see also Huff et al., 1992)

However, attention models are too often top-down (heuristics) centric, consequently anesthetizing sensing and sensemaking capabilities at lower hierarchical levels closer to resource markets. Indeed, "**the flow of information is the most critical**. The gathering [also in terms of sensing, i.e. perceiving and individual sensemaking - *selection*], transmission, storage [*retention*], and retrieval of information are among the most fateful activities of organizations." (Scott and Davis, 2007: 102; emphasis by DBK)

Perceptual filters are shaped, amongst other, by task-environments, purpose and goals. "In real life, people do not know all of the sources of stimuli, nor do they necessarily know how to distinguish relevant from irrelevant information. They must discover the characteristics of sources and tasks experimentally." (Starbuck and Milliken, 1988: 39) **Sensing and sensemaking are purpose-directed, generative, socially interactive, goal-driven, dissonance-sensitive, and experimental**. It is a form of experimentation, i.e. hypotheses-testing. As Anderson noted, the challenge is not "choosing the right response in light of a given stimulus but…choosing the right stimulus in light of a given goal." (Anderson, 2014: 182-3)

Purpose-/goal-directedness (i.e., the prediction model) is fundamental to sensing and sensemaking. Dissonance is a function of a pre-set goal generating predictions and submitting those predictions to continuous error-minimization.[128] These 'sensemaking models' are constantly adjusted through 'error' and 'deviation' feedback loops – coupling top-down predictions and bottom-up stimuli in circular causality with the sole objective of minimizing prediction errors and surprise or so-called 'free energy'.

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[128] "**If one does not know to which port one is sailing to, no wind is favorable**", a quote attributed to the Roman Stoic philosopher Lucius A. Seneca the Younger, underlines the fundamental importance of goal-directedness for filtering of environmental stimuli to act, make sense, and '*reveal'* competitive advantage.. There are many ways, but only one purpose.

Abduction[129] (Hansen, 2008) is a form of sensemaking that is of increasing interest to the study of strategic management, often simply defined as 'any hypothesis or guess is valid'. "While deduction and induction are important, neither produces truly new opportunities." (Dong et al., 2016: 107) Rather than starting from a proven template (deduction) or being trapped in inductive logic "[preventing] individuals from interpreting evidence in alternate ways" (Dong et al., 2016: 102), "abductive reasoning provides managers with the cognitive tools they need to sense opportunities and transform them into hypotheses that can be tested." (Dong et al., 2016: 99) Scenario planning, for example, is a form of abductive (active) inference. [130]

Abductive reasoning usually begins with a surprising observation or experience*. This is what shatters our habit and motivates us to create a hypothesis that might resolve the anomaly. Abduction is an inferential procedure in which we create a conjecture that, if it were correct, would make the surprising anomaly part of our normal understanding of the world." (Van de Ven, 2007: 101; emphasis by DBK)*

Innovative abduction, for example, "requires coming up with two new rules: a strategic option that logically connects to the desired outcome and a new way to combine a company's resources and capabilities, or a new business model, which has not been proven, to implement the option." (Dong et al., 2016: 108) This is the essence of strategic renewal as defined below. Prior knowledge, task-specificity, hierarchical positioning (Gavetti, 2005; 'cognition is situated'), and environmental scarcity (Schmitt et al., 2016) determine the focus of managers' attentional engagement (Shepherd et al., 2016: 626) and their respective sensing and sensemaking capabilities.

The central 'micro-macro' question of management research is: how does sensing and sensemaking - essentially cognitive activities that occur at the individual level - transmorph into an actionable firm-level view, i.e. organizational cognition? Dong et al. (2016) elegantly address this micro-macro dichotomy: "While hypothesis setting is an individual activity, hypothesis testing is an organizational activity… Organizational processes for the testing of new hypotheses do not require creativity; they require the scientific and rigorous generation of new data to confirm or refute the hypothesis."

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[129] "The American philosopher **Charles Sanders Peirce (1839-1914) introduced abduction into modern logic**. Over the years he called such inference hypothesis, abduction, presumption, and retroduction." Wikipedia (copied on May 4, 2019; emphasis by DBK): https://en.wikipedia.org/wiki/Abductive_reasoning

[130] See: Ramírez, R., Österman, R. and Grönquist, D. 2013. Scenarios and early warnings as dynamic capabilities to frame managerial attention. In Scenario Method: Current developments in theory and practice, Technological Forecasting & Social Change, 80: 825-838. However, this study is also trapped in the logic of 'environmental adaptation'.

(Dong et al., 2016: 112) However, this also presupposes that the firm's Upper Echelon is structurally and cognitively coupled with its bottom. Therefore, structure/hierarchy and hypothesis-testing are inseparably intertwined.

Leadership's ability to avoid being trapped in 'dominant logics' and to abductively *en-act* bottom-up stimuli and engage the organization cross-hierarchically in goal-directed hypotheses-testing is the essence of sensing and sensemaking as the foundation for firm performance and survival. This is the convergence of (cognitive) cause maps at the individual level into shared meaning at the organizational level – **purpose-driven environmental enactment** as a basis for strategic renewal.

In the context of strategic renewal, sensing and sensemaking is a form of organizational learning: essentially action-centric hypothesis-testing that connects the individual level with that of the firm. (Dong et al., 2016: 113) **Crossan's 4I model** (intuiting, interpreting, integrating, and institutionalizing) as applied to the context of strategic renewal (Crossan et al., 2003) **provides the framework for the process of trans-morphing individual sensing and sensemaking (cognition) into firm-level strategic action**. Intuiting and interpreting a hypothesis starts at the individual level, and then the interpretation (sensemaking) process becomes socialized, integrated and institutionalized at the firm level.

It is **neuroscience's predictions-processing and error-minimization framework** (Friston, 2010; Clark, 2016) that allows us to take management science's nexus of structure and cognition (Ocasio, 1997; Gavetti, 2005) one step further to provide a more complete and relevant framework for applying sensing and sensemaking to the context of strategic renewal. Effectively, sensing and sensemaking is empowered by the circular causality between top-down knowledge structures (prediction models, predictions, hypotheses and guesses) and bottom-up stimuli/data-points from resource markets. **This purpose-directed, action-centric (enactivist), and dissonance-filtering way of embracing '*organizational becoming*' forms the cognitive basis for firm performance-relevant sensing and sensemaking.**

This dissertation defines and operationalizes sensing and sensemaking as non-operational and generative meta-capabilities at the board level, where purpose-directed and pro-active environmental enactment (rather than environmental adaptation) determines the firm-environment relationship. The specific dynamic board capability is purpose-directed duality [131] management, specifically, in form of (1) real-time

[131] 'Duality' as defined by Farjoun (2000, 2010) and Putnam et al. (2016).

vacillation between exploitation and exploration across all hierarchical layers, and (2) balancing financial vs. strategic control. It is in particular the latter dimension that will be of interest to this dissertation and, in particular, the empirical study. Balancing financial vs. strategic control – *determining engagement in the market for corporate control* - is the essential dynamic board capability, fundamentally a matter of purpose-directed generative sensing and sensemaking:

Firms "engaging in acquisitions and divestitures emphasize financial controls, deemphasize strategic controls, and thereby produce less internal innovation. Furthermore, these firms are likely to seek external innovation to gain short-term benefits in competitive advantage. ***We conclude that engaging in the market for corporate control strongly affects the context in which innovation is framed, the control mechanisms employed, and the design and process of innovation****." (Hitt et al., 1996: 1084; emphasis by DBK)*

As such, sensing and sensemaking are advanced as critical dynamic board capabilities and operationalized for continuous strategic renewal within a 'Free-Energy Governance' framework, centered around the triplet of (1) structure, (2) cognition, and (3) capabilities and determined by one simple objective: minimizing the error/surprise (free-energy) differential between top-down predictions and bottom-up stimuli for a given purpose.

1.7.2 Strategic renewal

Strategic renewal as a defined concept has laid the foundation for a distinct stream of research in strategic management. [132] Numerous definitions have been advanced emphasizing consistently its demarcation to the more general concept of 'strategic change'.[133]

The very origins of strategic renewal research were motivated primarily by understanding its antecedents[134], in particular the firm-environment linkage: environmental change leads to organizational stress, which confronts the firm's inertia, and imposes strategic renewal to 're-fit' the firm with the environment (Huff et al., 1992).[135] According to this view, the alignment of firm with environment is defined as the predominant driver of strategic renewal **('co-alignment school')**.

In contrast, this dissertation rejects environmental 'co-alignment' as a rather futile, illusory, and unsustainable objective. In distributed and discontinuous market environments, environmental adaptation - based on retrospective sensemaking of environmental change - is no longer (if ever) a viable strategic objective or modus operandi. A firm must operate on the basis that its actions change, create or destroy

[132] The literature on strategic renewal is vast. However, a number of publications stand out; most notably, **Schmitt et al. (2018) for a rather up-to-date overview on past research and theoretical tensions**; Schmitt et al. (2016) for linking strategic renewal to environment; Eggers and Kaplan (2009) for linking cognition in terms of attention and renewal; Agarwal and Helfat (2009) for emphasizing the role of dynamic capabilities in renewing the firm's resource base; Crossan and Berdrow (2003) for an in-depth case study defining strategic renewal as tension of organizational learnings; **Golden and Zajac, (2001)** as well as **Westphal and Fredrickson (2001) emphasizing the board of directors' critical role in strategic renewal**; Floyd and Lane (2000) for taking strategic renewal beyond Upper Echelon and emphasizing its cross-hierarchical nature, specifically the relevance of middle-management; **Barr et al. (1992) for relating strategic renewal to sensing (noticing) and sensemaking (interpretation)**; and Huff et al. (1992) studying the antecedents of strategic renewal in terms of the dynamic interaction of cumulative stress and inertia.

[133] "Strategic change functions as an umbrella concept referring to many different types of strategic changes within and across firms (Rajagopalan and Spreitzer, 1997), but **strategic renewal refers only to a specific type of strategic change – the transformation of the firm's current strategic intent and capabilities**. Strategic renewal thus excludes other types of strategic changes, such as strategic extensions, additions or deletions (Agarwal and Helfat, 2009)." (Schmitt et al, 2018: 86; emphasis by DBK)

[134] This dissertation is not interested in the antecedents of strategic renewal, but firmly focused on the link of structure/hierarchy and organizational learning processes and its impact on the performance outcome of strategic renewal. For a valuable review of research on antecedents such as CEO turnover/tenure, TMT demographics, organizational demographics (size/age/lifecycle), past performance, and environmental/industrial context please see bachelor thesis: Luther, M. 2009. Strategic renewal research: what do we know? What should we know? University of St. Gallen.

[135] Huff, J.O. and Huff, A. 1995. Stress, inertia, opportunity and competitive position: a SIOP model of strategic change in the pharmaceuticals industry. Academy of Management Journal, 38: 22-27.

markets and enact environmental change (**'co-creation school'**). Environment and environmental change are actor-dependent concepts.

Strategic renewal, at its heart, is not a responsive but rather proactive and continuous commitment to future firm performance and survival. Strategic renewal in terms of 'organizational becoming' is the categorical imperative of 'being in the game'. It is not a choice. What matters are the purpose-directed learning and knowledge-creating processes[136] that circularly connect bottom-up stimuli/message-passing[137] with top-down strategic belief-propagation.

At its core, strategic renewal is a "process, content, and outcome of refreshment or replacement of attributes of an organization" (Agarwal and Helfat, 2009: 282), essentially managing "the tension between institutionalized learning and the processes of intuiting, interpreting, and integrating" new learnings (Crossan et al., 2003: 1090), "the tension between exploration and exploitation" (Crossan et al., 2003: 1088), "an iterative process of belief, action, and learning" (Floyd and Lane, 2000: 154), where "periods of incremental adjustment (single-loop learning) are broken by bursts of revolutionary change (double-loop learning)" (Floyd and Lane, 2000: 155).

This dissertation adopts a design and action-centric learning perspective in defining strategic renewal, which is best captured by Schmitt at al. (2018: 85): **"Strategic renewal (a) involves a transformation of the firm's core capabilities associated with competitive advantage, (b) concerns the entire organization and has implications across organizational levels and (c) is essential to break path dependence and ensure the firm's long-term survival."**

To approach strategic renewal as an Upper Echelon-centric top-down-only challenge is counterproductive. "Given the importance of social interactions to knowledge development and organizational learning, **we believe that renewal can be understood best as a system of relational or social exchanges**" (Schmitt et al., 2018: 86; emphasis by DBK). However, once strategic renewal is embraced as a 'system of relational or social exchanges' the need for a cross-hierarchical connect emerges. "Although ideas

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[136] "Learning is here defined as the detection and correction of errors, and error as any feature of knowledge or of knowing that makes action ineffective. Error is a mismatch: a condition of learning, and matching a second condition of learning. The detection and correction of error produces learning and the lack of either or both inhibits learning." (Argyris, 1976: 365)

[137] "Although the terms 'information' and 'knowledge' are often used interchangeably, there is a clear distinction between information and knowledge… In short, **information is a flow of messages, while knowledge is created and organized by the very flow of information**, anchored on the commitment and beliefs of its holder." (Nonaka, 1994: 15)

are formed in the minds of individuals, interaction between individuals typically plays a critical role in developing these ideas. That is to say, '**communities of interaction**' contribute to the amplification and development of new knowledge…these communities might span departmental or indeed organizational boundaries." (Nonaka, 1994: 15, emphasis by DBK)

Floyd and Lane (2000: 165) approached strategic renewal as a manifestation of 'strategic role conflict' emphasizing the difference in nature of 'boundary-spanning interactions' at the operating level (*focus on factor or product m*arkets), within top-management *(focus on capital markets and shareholder concerns*), and middle managers (*focus on mediating between the two levels and on cues from any one of the three sub-environments*). Indeed, **the success and sustainability of strategic renewal is a function of integrating through a generative top-down/bottom-up learning process the 'boundary-spanning interactions' of all organizational levels**[138]**, i.e, 'communities of interaction'.**

More specifically, important questions arise: (1) which layers within and beyond the organization form part of the 'communities of interactions' (top-down/lateral/bottom-up)? and (2) how is this related to the success and sustainability of strategic renewal, long-term firm performance, and survival?[139] The more top-down centric and exclusive the 'community of interactions' initiating strategic renewal, the less effective organizational learning may be, the more questionable the transformative nature, performance, and sustainability of strategic renewal could be, for example.

One may propose that **the more top-down centric and exclusive the 'community of interactions', the more likely that the strategic renewal process is outward-oriented, i.e. turning to M&A, minority investments, and venture-partnering** to provide access to new knowledge and markets. In the absence of circular top-down/bottom-up organizational learning, the firm may become trapped in top leadership's 'dominant logics', highly dependent on M&A/joint-venture-driven innovation and growth, and increasingly disconnected from its very field 'intelligence'.

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138 "Strategic role conflict arises from uncertainty about which resources to accumulate and about the match between existing competencies and those needed for future competition (termed strategic risk by Cool & Schendel, 1988)." (Floyd and Lane, 2000: 169) "When managers share the belief that the market for ideas and resources operates fairly, then the requisite trust in exchange partners and commitment to the market process will be maintained. This reduces conflict both within individual managers and conflict between roles engaged in relational exchanges. Thus, market control reduces strategic role conflict through a leveling of expectations." (Floyd and Lane, 2000: 170)

139 A learning-centric approach embraces **'good failure'** (i.e. knowledge-creating failure) as potentially supportive of long-term firm performance.

Eventually, financial control is likely to squeeze out strategic control, making the firm potentially rather more than less vulnerable as future-dependent innovation can no longer be generated from within (Hitt et al., 1996). "Successful changes in the organizational domain are preceded by bottom-up learning and internal selection. **Unless preceded by learning, domain shifts increase the organization's vulnerability to external selection and expose to significant survival risk**." (Floyd and Lane, 2000: 155; emphasis by DBK)

The board of directors is a critical boundary-spanning member of the 'community of interactions'. While the role and influence of the board of directors in initiating and directing strategic renewal have been appreciated (Goodstein and Boeker, 1991; Golden and Zajac, 2001; Westphal and Fredrickson, 2001; Bongjin et al., 2009), they are generally treated as top-down driven, determined by pre-existing dominant logics, and overall dependent on board power rather than a generative and interactive learning-oriented process that connects all organizational layers. This conclusion generally applies to the seminal research studies addressing the cognitive role of the board in strategy process (Forbes and Milliken, 1999; Rindova, 1999) as well as studies addressing the strategic mandate of the board and its impact on performance (Hendry and Kiel, 2004; Hambrick et al., 2008; Walls et al., 2012).

Strategic renewal research is in need of a more comprehensive framework, structurally, process-wise, and cognitively, resolving the hierarchical disconnect (Schmitt et al., 2018: 90). The board of directors must be integrated as a distinct cognitive variable into the 'community of interactions'. Further, we must ensure that strategic renewal initiatives are based on continuous top-down/bottom-up learning-loops spanning all hierarchical levels (Mom et al., 2007). More importantly, in a distributed and discontinuous world, the very nature of strategic renewal's focus cannot be firm performance but must be firm survival.

When Siebel (2019: 22) defines digital transformation as '*wholesale reinvention*' he effectively establishes the categorical imperative of strategic renewal. There cannot be any 'wholesale reinvention' without addressing first the firm's governance framework.

Free-Energy Governance lays the foundation for the success and sustainability of strategic renewal in a discontinuous and distributed world.

1.7.3 Free-Energy Governance (FEG)

Free-Energy Governance (FEG) is introduced as a new logic of *organizing* built around three core dimensions: *structure* (hierarchy), *cognition* (environmental enactment), and *capabilities* (sensing and sensemaking). The framework is centered around cross-hierarchical generative sensing and sensemaking to *institutionalize* continuous strategic renewal in pursuit of firm outperformance and survival. FEG leverages neuroscience's free-energy principle and its modelling of the brain as a hierarchically deterministic structure continuously minimizing the mathematical difference between top-down predictions and action-generated bottom-up stimuli –in pursuit of surprise- or entropy-minimization.[140]

In essence, FEG, in analogy to neuroscience's free-energy principle, is "**a unified account of action, perception and learning**" (Friston, 2010: 127; emphasis by DBK) embracing strategic renewal as a circularly causal top-down/bottom-up learning system (within each hierarchical layer) dedicated to action-generated predictions, prediction-error minimization, and the continuous challenge of prediction models through double-loop learning.

*"**Single-loop learning** occurs when errors are detected and corrected without altering the governing values of the master program. **Double-loop learning** occurs when, in order to correct an error, it is necessary to alter the governing values of the master programs."* (Argyris, 2005: 262-63; emphasis by DBK)

Most governance models are at best single-loop (reinforcement-based) learning systems but cannot produce (and often deliberately avoid in form of 'skilled incompetence') double-loop learning (i.e., change and develop the underlying prediction models in real-time).

The free-energy principle, which traces its origins to biophysics, machine learning, and theoretical neuroscience (Friston, 2006, 2009, 2010; Hohwy, 2013; Clark, 2016; Ramstead et al., 2018), **is for the first time leveraged to designing strategy process**

[140] "**Entropy**, the measure of a system's thermal energy per unit temperature that is unavailable for doing useful work. Because work is obtained from ordered molecular motion, the amount of entropy is also a measure of the molecular disorder, or randomness, of a system. **The concept of entropy provides deep insight into the direction of spontaneous change for many everyday phenomena**. Its introduction by the German physicist Rudolf Clausius in 1850 is a highlight of 19th-century physics." (Encyclopaedia Britannica: https://www.britannica.com/science/entropy-physics; copied on November 5, 2019; emphasis by DBK)

in form of a new governance framework that is dedicated to the minimization of surprise in pursuit of firm survival. All living self-organizing systems, as is true for organizations, strive to reduce entropy by minimizing error, i.e. free energy. But organizations, other than living systems[141], are too often trapped in what Argyris (1995: ix) termed 'skilled incompetence', meaning that organizations are programmed to deal with error and "threat in ways that are counterproductive to their own intentions." (Argyris, 1995: ix; emphasis by DBK)

"*Error is a condition of mismatch. The first condition for learning is the detection and correction of error. The second condition for learning is match; that is, the ability to create conditions that match plans and expectations with effective action*." (Argyris, 1995: xiii)

In essence, FEG is a circular learning system defined as (1) purpose-oriented and goal-directed, (2) action-centric and enactivist, and (3) prediction-error- and -surprise-minimization-driven.

"*In summary, (i)* ***agents resist a natural tendency to disorder by minimizing a free energy bound on surprise****; (ii)* ***this entails acting on the environment to avoid surprises****, which (iii) rests on* ***making Bayesian inferences about the world****. In this view, the Bayesian brain ceases to be a hypothesis, it is mandated by the free-energy principle; free-energy is not used to finesse perception, perceptual inference is necessary to minimize free-energy. This provides a principled explanation for action and perception that serve jointly to suppress surprise or prediction error*". (Friston, 2009: 295; emphasis by DBK)

Experiments in computer gaming have demonstrated the superiority of the 'free-energy agent'.[142] Analogously, FEG is crystalizing the poverty of contents-centric 'rewards-

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[141] "The FEP [Free-Energy-Principle] stems from the idea that living systems can be distinguished from other self-organising systems because they actively avoid deleterious phase-transitions by bounding the entropy of their sensory and physical states – **under the FEP, to be alive simply means to revisit a bounded set of states with a high probability**." (Badcock et al., 2019: 4; emphasis by DBK)

[142] "In late 2017, a group led by Rosalyn Moran, a neuroscientist and engineer at King's College London, pitted two AI players against one another in a version of the 3D shooter game Doom. The goal was to compare an agent driven by active inference to one driven by reward-maximization. The reward-based agent's goal was to kill a monster inside the game, but the free-energy-driven agent only had to minimize surprise. The Fristonian agent started off slowly. But eventually it started to behave as if it had a model of the game, seeming to realize, for instance, that when the agent moved left the monster tended to move to the right. After a while it became clear that, even in the toy environment of the game, the reward--maximizing agent was "demonstrably less robust"; the free energy agent had learned its environment better. "**It outperformed the reinforcement-learning agent because it was exploring**," Moran says. In another simulation that pitted the free-energy-minimizing agent against real human players, the story was

pursuing' strategy approaches that are overly dependent on 'repeat-game experience' priors compared to those that are designed to simply minimize surprise by way of generative top-down/bottom-up prediction-error-minimization.

"[T]he beauty of the free energy model is that it allows an artificial agent to act in any environment, even one that's new and unknown. *Under the old reinforcement-learning model, you'd have to keep stipulating new rules and sub-rewards to get your agent to cope with a complex world. But* ***a free energy agent always generates its own intrinsic reward: the minimization of surprise****." (Julie Pitt, Director of Data Science Platform at Netflix)* [143]

FEG applies to strategic management the brain's hierarchically deterministic structure and its underlying generative processes: brain dynamics "can be described as realising an implicit hierarchical generative model: **a Bayesian hierarchy of 'hypotheses' or 'best guesses' about the hidden causes of our sensory states**". (Badcock et al., 2019: 5; emphasis by DBK)

"Under this view, the lowest or most peripheral levels of the cortical hierarchy comprise relatively segregated, highly specialised neural mechanisms responsible for sensorimotor processing ***('domain-specific' systems****), while its higher, deeper or more central layers consist of developmentally plastic, highly integrated* ***('domain-general')*** *mechanisms. The latter are widely distributed subsystems that respond flexibly to input received from multiple lower levels, feed information downstream for further*

similar. The Fristonian agent started slowly, actively exploring options—epistemically foraging, Friston would say—before quickly attaining humanlike performance. Moran told me that **active inference is starting to spread into more mainstream deep-learning research**, albeit slowly. Some of Friston's students have gone on to work at DeepMind and Google Brain, and one of them founded Huawei's Artificial Intelligence Theory lab." (Raviv, S. December 2018. The genius neuroscientist who might hold the key to true AI. Wired Magazine; downloaded on January 5, 2020: https://www.wired.com/story/karl-friston-free-energy-principle-artificial-intelligence/; emphasis by DBK)

143 "Julie Pitt, head of machine-learning infrastructure at Netflix, discovered Friston and the free energy principle in 2014, and it transformed her thinking. (Pitt's Twitter bio reads, "I infer my own actions by way of Active Inference.") Outside of her work at Netflix, she's been exploring applications of the principle in a side project called Order of Magnitude Labs. Pitt says that **the beauty of the free energy model is that it allows an artificial agent to act in any environment, even one that's new and unknown**. Under the old reinforcement-learning model, you'd have to keep stipulating new rules and sub-rewards to get your agent to cope with a complex world. But **a free energy agent always generates its own intrinsic reward: the minimization of surprise**. And that reward, Pitt says, includes an imperative to go out and explore." (Raviv, S. December 2018. The genius neuroscientist who might hold the key to true AI. Wired Magazine; downloaded on January 5, 2020: https://www.wired.com/story/karl-friston-free-energy-principle-artificial-intelligence/; emphasis by DBK)

processing, and underlie the executive cognitive functions unique to humans." (Badcock et al., 2019: 3; emphasis by DBK)

To embrace both strategic renewal as well as corporate governance as an error- or active-inference based surprise-minimization process requires continuous and generative interaction between top-down predictions (strategic decision making; '*domain-general*') and bottom-up (business-unit/field level; '*domain-specific*') action-generated stimuli, in circular causality. Free-Energy Governance is fundamentally redefining the logic of coupling governance and operational channels. This is what **structure** is about in the context of FEG.

FEG's second critical foundation is an enactivist environmental engagement (**cognition**). "*According to this emerging class of models, naturally intelligent systems do not passively await sensory stimulation. Instead, they are constantly active, trying to predict (and actively elicit, […]) the streams of sensory stimulation before they arrive. Before an input arrives on the scene, these pro-active cognitive systems are already busy predicting its most probable shape and implications. Systems like that are already (pretty much constantly) poised to act, and all they need to process are sensed deviations from the predicted state. […] Action is not so much a 'response to an input' as a neat and efficient way of selecting the next input, driving a rolling cycle.*" (Clark, 2016: 52)

Environment is enacted in form of purpose-directed (prediction-model centric) and curiosity-driven (Friston et al., 2017) sensory revealing of significance and insight emanating from the outer world. This leads to the Markov blanket[144], a learning algorithm in form of a 'veil', intermediating the internal and external worlds[145] (Ramstead et al., 2018).

[144] "In statistics and machine learning, when one wants to infer a random variable with a set of variables, usually a subset is enough, and other variables are useless. Such a subset that contains all the useful information is called a Markov blanket. If a Markov blanket is minimal, meaning that it cannot drop any variable without losing information, it is called a Markov boundary. Identifying a Markov blanket or a Markov boundary helps to extract useful features. The terms of Markov blanket and Markov boundary were coined by Judea Pearl in 1988." (Wikipedia: https://en.wikipedia.org/wiki/Markov_blanket)

[145] Ramstead et al. (2018) "[rejoin] 'enactivist' and 'affordances' accounts in phenomenology and ecological psychology, in which **'reality' for a living organism is understood as perspective-dependent, and constructed from an agent's prior dispositions ("probabilistic beliefs" in Bayesian terms). In ecological terms, an organism operates in a niche within what its dispositions in relation to features of the environment 'afford'**. Ramstead et al. borrow the concept of **Markov Blanket** from mathematics to **describe the processing of internal states and beliefs through which an organism perceives its environment.** In machine learning, a **Markov Blanket is a learning algorithm** consisting of a network of nested 'parent' and 'children' nodes for hierarchical information processing. Ramstead et al. take up this model to describe the perceptive 'veil' through which human sensory states are coupled to affordances of the broader environment." (Veissière, 2018. 47; emphasis by DBK)

For the purposes of this dissertation, the concept of the Markov blanket will not be elaborated in detail. Ramstead et al. (2018) have laid the neuroscientific foundation for the Markov blanket as integral to free-energy minimization in all living systems relating to their environment.[146] The relevance and insightfulness of applying the 'blanket' to an organizational setting, precisely in the context of strategic renewal in a discontinuous and distributed world, is to embrace the firm-environment interrelatedness in form of a veil:

"*One needs to differentiate between the system and its environment—those states that constitute or are intrinsic to the system and those that are not. To do this, we have to introduce a third set of states that separates internal from external states. This is known as a Markov blanket. Markov blankets establish a conditional independence between internal and external states that renders the inside open to the outside, but only in a conditional sense (i.e., the internal states only 'see' the external states through the 'veil' of the Markov blanket). […] With Markov blankets in mind, it is fairly straightforward to show that the internal states must - by virtue of minimising surprise - encode a probability distribution over the external states; namely, the causes of sensory impressions on the Markov blanket*." (Ramstead et al., 2018: 2-3)

Effectively, 'internally encoding a probability distribution over the external states' is the essence of the Markov blanket. More importantly, each living system has a distinct probability distribution over the external states. Therefore, there are as many Markov blankets as there are living systems (economic actors) and, consequently, environment in form of 'external states' is first and foremost a matter of 'encoding probability distribution over the external states' and, more importantly, to continuously challenge that probability distribution as well as the external states in pursuit of 'proximal avoidance of surprise'. In the absence of a Markov blanket, according to Free-Energy Governance, a firm is naturally entropy-bound as environment is perceived as inhibiting uncertainty (i.e., an internal probability distribution over external states is non-existent).

[146] Bruineberg and Hesp (2017: 38) outline limitations to Ramstead et al.'s (2018) broad interpretation of the Markov Blanket. Also Kirchhoff (2018) considers Ramstead et al.'s (2018) application of the Markov Blanket as too encompassing: "In other words, the larger the scope of their preferred Markov blanket formulation, the less likely it is to say much about the specifics of *living* organisation. In my opinion, the following distinction is underemphasised in their account: the difference between 'mere active inference' and 'adaptive active inference'." (Kirchhoff, M. 2018. Hierarchical Markov blankets and adaptive active inference: Comment on "Answering Schrödinger's question: A free-energy formulation" by Ramstead, M. et al. Physics of Life Reviews, 24: 27–28; p. 29)

FEG's third building block is dedicated to **capabilities**. Upper Echelon capabilities such as sensing and sensemaking are critical to initiating, implementing, and continuously fostering a FEG-inspired approach to *organizing,* devoted to continuous learning, strategic renewal, and, hence, firm survival. The concept of dynamic board capabilities is introduced: duality management of exploitation/exploration and financial/strategic control. While the free-energy principle serves as the operating system, dynamic board capabilities are at the 'application layer' dedicated to continuous strategic renewal in pursuit of suppressing entropy.

While this dissertation firmly embraces free-energy minimization as a principle that aims "for the ultimate integration of the life sciences and social sciences under one unifying principle"[147], the definition of Free-Energy Governance should conclude on a thought-provoking note:

"*Social scientists, at least since Weber, have often lamented the human cost of bureaucratization and rationalization, but these dynamics have rarely been theorized as natural consequences of free-energy minimization. Rather than propose a weird metaphysics of autonomous, self-organizing 'societies', however, social and cognitive scientists should mind the cognitive gap, and remember that the 'culprit', if there is one, is none other than the simplicity-craving, free-energy-minimizing human mind. For the rest, we can also celebrate the many human traditions in spirituality, the humanities, and the Arts that have emphasized the importance of doubt, uncertainty, novelty, and unknowability. In the end, it may very well be these propensities to resist free-energy minimization that make us humans*." (Veissière, 2018: 49)

Free-Energy Governance (FEG) is not 'simplicity-craving' for the sake of simplicity. In fact, **FEG is a next-generation learning system** designed for a discontinuous world, de-chaining the firm from dominant top-down logics, and empowering continuous strategic renewal. Purpose-directed and generative top-down/bottom-up processes are designed for stimuli emanating from each member and nod within and outside the firm to challenge the fallibility of Upper Echelon predictions and their respective models. Contrary to Veissière (2018: 49), **FEG's underlying free-energy principle empowers doubt, novelty-seeking, and unknowability**.

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[147] Bruineberg and Hesp (2018: 37)
"Markov blankets were originally cast by Pearl as epistemological properties (of a specific class) of models rather than as ontological properties of the world. Boundaries as ontological properties that demarcate a spatio-temporal unit of organization are more reminiscent of autopoietic boundaries than of Pearl's original usage." (Bruineberg and Hesp, 2018: 38)

2 General Theoretical Part

2.1 Free Energy Governance

Free-Energy Governance (FEG) has been inspired, first and foremost, by neuroscience's '**free-energy principle**' (Friston, 2009, 2010). **'Sensemaking perspective'** (Weick, 1969, 1995), **attention-based view** (Ocasio, 1997), and **dynamic capabilities view** (Teece et al. 1997; Helfat and Peteraf, 2015; Helfat and Martin, 2015) have been no less inspirational.

FEG introduces a new cross-hierarchical framework that uniquely integrates the 'triplet' of structure, cognition, and capabilities, specifically in the context of continuous strategic renewal in pursuit of firm survival in a discontinuous and distributed world. Free-Energy Governance is developed as both a generative logic of organizational governance as well as an early-warning system predicting corporate decay.

Essentially, six core theoretical perspectives together lay the foundation for this new conversation: (1) ***Upper Echelon View*** (UEV); (2) ***Attention-Based View*** (ABV); (3) ***Dynamic Capabilities View*** (DCV); (4) ***Enactivist Approach*** (EA); (5) ***Prediction Processing Framework*** (PPF); and (6) ***Antagonistic Neural Networks Perspective*** (ANNP).

2.1.1 Upper Echelon View (UEV)

UEV defines the organization as a reflection of its Upper Echelon, i.e., top management team (TMT) (Hambrick and Mason, 1984). [148] UEV's central premise is that "executives' experiences, values, and personalities affect their (1) field of vision (the directions they look and listen), (2) selective perception (what they actually see and hear), and (3) interpretation (how they attach meaning to what they see and hear)." (Hambrick, 2007: 337)

Essentially, UEV embraces sensing and sensemaking, not only as essential leadership qualities, but as the foundation for strategic choices and firm performance. There are numerous studies that have applied or attempted to further develop UEV by focusing on team-diversity and CEO characteristics[149].

However, no study to date has shed light into the many black boxes that trap UEV's relevance to practice. Family-controlled businesses, for example, pose different challenges altogether but have not been considered as part of the UEV conversation (see Le Breton-Miller and Miller, 2006). Overall, the power of UEV is its aggregating nature: rather than considering individual leadership qualities, top leadership is treated as one unit of analysis to explain strategic choices and firm performance. Indeed, reality is socially constructed.

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[148] Calori, R., Johnson, G. and Sarnin, P. 1994: CEOs' cognitive maps and the scope of the organization. Strategic Management Journal 15: 437–457: "**Strategies are abstractions in the mind of managers** (Mintzberg, 1987); they emerge from sets of ideas and constructs through which problems are identified and interpreted (Hedberg and Jonsson, 1977). Although several actors may interact through social interchange to produce collective interpretations, top management is responsible for providing organizations' interpretations of their environment and strategic responses (Daft and Weick, 1984; Smircich and Stubbart. 1985). 'Indeed, **the imposition of meaning on issues characterized by ambiguity has become a hallmark of the modern top manager**' (Thomas, Clark, and Gioia, 1993: 240)." (p. 438; emphasis by DBK)

[149] Georgakakis, D., Ruigrok, W. and Peck, S. 2014. Antecedents and consequences of top management team diversity. Expanding the upper echelons research stream. Dimitrios Georgakakis, Dissertationen/ Universität St. Gallen: No. 4270 (viewed 7 November 2019, <https://search.ebscohost.com/login.aspx?): "Despite the relevance of this topic, however, upper echelon studies provide inconclusive results on the effects of diverse TMT composition on firm outcomes (Carpenter, Geletkanycz, & Sanders, 2004; Nielsen, 2010). **Some studies show that TMT diversity has a positive impact on firm performance (Carpenter, 2002), while others provide evidence for a negative (Michel & Hambrick, 1992), or even a nonsignificant effect** (West & Schwenk, 1996). To overcome this inconsistency, upper echelons research should adopt approaches that simultaneously consider both the drivers and consequences of TMT composition (Boone, van Olffen, van Witteloostuijn & de Brabander, 2004; Carpenter et al., 2004; Nielsen, 2009)." (p.1; emphasis by DBK)

However, UEV suffers from two critical limitations: (1) there is no explicit consideration for the board of directors as part of the Upper Echelon; the many dimensions by which a Chairman relates to the CEO, for example, determines strategic choices; and (2) the linkage of Upper Echelon into the rest of the organization, i.e. the coupling of governance and operational channels, is unidirectionally top-down and therefore limited. **How the field-data can systematically talk to Upper Echelon and influence their values, perception and attention remains a black-box**.

While UEV has neglected the board of directors, this dissertation emphasizes the importance of the board as part of a firm's Upper Echelon: TMT and the board of directors, here jointly labelled as 'Upper Echelon', are together the locus of strategic decision-making. More importantly, the board of directors can potentially assume a unique cognitive role in strategy process in the form of dynamic board capabilities that is highly complementary to that of senior executive leadership.

Further, UEV has neither addressed "the psychological and social processes by which executive profiles are converted into strategic choices" (Hambrick, 2007: 337) nor can UEV explain how strategic renewal is initiated, in particular, how the board of directors potentially complements senior executive management. As a result, UEV is rather top-down and provides no open interface for bottom-up stimuli, neither from within nor outside the organization. In short, the Upper Echelon framework does not explicitly address the circular causality of top-down predictions and bottom-up stimuli. Therefore, at best, it is incomplete.

Indeed, while UEV's central premise was about establishing a causal link between senior executives' characteristics and strategic action, Hambrick recognizes in his 'Update' (Hambrick, 2007: 338) that this can be a futile task, confusing causality with consequences. UEV must be further developed: (1) the board's strategic capacity, critically determines firm performance; and (2) strategic choices must be redefined as a function of top-down/bottom-up prediction-processing and generative sensing and sensemaking (i.e., error-minimization). Cognition and structure are inseparable.

Unless these limitations are addressed, UEV is far too restrictive and one-sided (top-down) to explain through the lens of leadership qualities the anatomy of success and failure of strategic renewal. This dissertation invites to a new stream of UEV-centric research that operationalizes UEV's impact on firm performance not so much in terms of 'antecedents and consequences of team diversity' but as a function of: (1) **structure**: coupling governance and operational channels in form of *recognition density*; (2)

cognition in form of *environmental enactment*; and (2) **capabilities** in form of duality management: managing/balancing in real-time across all hierarchical layers exploitation vs. exploration and financial vs. strategic control.

At the firm level, Upper Echelon is a relevant unit of analysis: top-level predictions and underlying prediction models lay the foundation for goal-directed generative sensing processes, engaging lower-level hierarchical layers within the organization. However, UEV has fallen short of linking Upper Echelon cognition to the rest of the organization (structure: recognition density). **UEV provides an essential foundation to Free-Energy Governance (top-down), but otherwise is rather incomplete and anti-clocked.**

2.1.2 Attention-based View (ABV)

Ocasio (1997) proposes ABV[150] as an attention-centric metatheory for socially situated organizational action and adaptation, linking structure and Upper-Echelon cognition: (1) what decision-makers do, depends on their focus (Focus of Attention); (2) what they focus on, depends on the context (Situated Attention); and (3) context depends on the firm's rules, resources, and social relationships (Structural Distribution of Attention) (Ocasio, 1997: 188). ABV advances an interpretation of "strategy as the product of relatively tacit psychological mechanisms that activate, buffer, or guide managers in their strategic thoughts." (Bouquet and Birkinshaw, 2011: 244).[151]

ABV defines attention as "noticing, encoding, interpreting, and focusing of time and effort by organizational decision-makers on both (1) issues… and (2) answers" (Ocasio, 1997: 189)[152], primarily related to environment, environmental change and its specific impact on competitiveness and survival. ABV is centered on Upper Echelon paying attention to the right issues and signals that are environmentally generated. The link

[150] "**Attention is a concept with a long and rich yet diverse history in organization science**." (Ocasio, 2011: 1286; emphasis by DBK) See Ocasio (2011) for an epistemological overview of attention in organization science.

[151] "As such, the ABV may be viewed as part of two recent trends in strategic management. The first is found in attempts to **build a behavioral theory of strategy (Gavetti, 2012; Powell, Lovallo, & Fox, 2011) by exploring the cognitive foundations of strategy making, competitive advantage, and firm performance**. The second is the increasing emphasis on providing microfoundations for macro constructs, such as dynamic capabilities (Felin & Foss, 2005; Gavetti, 2005; Teece, 2007). At the same time, the ABV harkens back to foundational work in management, especially Simon's work on bounded rationality (Simon, 1947; Simon & March 1958). Indeed, the ABV extends Simon's key point that limited attention is a central aspect of the boundedness of human rationality… Scholars have integrated the ABV with a variety of theories and perspectives. For example, Cho and Hambrick (2006) **integrate the upper-echelons perspective with the ABV**. Yu, Engleman, and Van de Ven (2005) **combine the ABV with the organizational sensemaking perspective** (Weick, 1995) to foster the understanding of attention allocation in mergers and acquisitions. McMullen, Shepherd, and Patzelt (2009) integrate the ABV with regulatory focus theory (Brockner & Higgins, 2001; Higgins, 1997, 2002) to provide an explanation of **why different hierarchical echelons pay varying amounts of attention to competitive threats**. Similarly, Barreto and Patient (2013) draw on construal level theory (Liberman & Trope, 1998) and issue diagnosis theory (Dutton, Fahey, & Narayanan, 1983) to explain within the ABV **why "managers within the same firm differ in their attention to opportunity versus threat aspects of the same exogenous shock**" (p. 687)." (Stea, D., Linder, S. and Foss, N. 2015. Understanding organizational advantage: how the theory of mind adds to the attention-based view of the firm. In 'Cognition and Strategy' (Advances in Strategic Management, Vol. 32), Emerald Group Publishing Limited: 277-298; p.278-279: emphasis by DBK; permanent link downloaded on November 9, 2017: https://doi.org/10.1108/S0742-332220150000032009)

[152] However, attention "is not a unitary concept but a variety of interrelated mechanisms and processes that at the level of the human brain operate in diverse ways" and research "is similarly focused on diverse aspects of attention: attentional perspective, attentional engagement, and attentional selection." (Ocasio, 2011: 1286).

between cognition and action is essential (Weick, 1995): attention is either stimulated through action or leads to action. "What people refer to as their environment is generated by human actions and accompanying intellectual efforts to make sense out of these actions. **The character of this produced environment depends on the particular theories and frameworks, patterns of attention, and affective dispositions supplied by the actor-observers**." (Smircich and Stubbart, 1985: 726; emphasis by DBK)

ABV cannot explain the social nature of reality construction as a function of attention. While ABV views organizations as 'systems of structurally distributed attention' (Ocasio, 1997: 189) where structure channels attention, ABV treats the 'channeling' as a black box. The nature of stimuli that catches the attention of an organizational member does vary in function of structure and hierarchical positioning: "the interplay between cognitive and experiential, semiautomatic forms of behavior suggests the need for more explicit attention to the role of the organizational hierarchy than most theory on capabilities implies." (Gavetti, 2005: 600) Indeed, the power of ABV is in linking cognition and structure. However, ABV does not explicitly consider the board of directors' potentially unique role in terms of determining a firm's attention focus.

This limitation is in particular of relevance against the background that **senior managers "live inside their frames and, to a very great extent, don't know what lies outside**." (Hamel and Prahalad, 1994:54; emphasis by DBK). While this may be equally true for individual board directors, board directors are less likely to be trapped in the very same exploitation-centric frames as TMT in any particular organization. Neither UEV nor ABV have given due consideration to the dynamic interplay between TMT and the board. The relevance of dynamic capabilities (in the case of ABV: connecting 'sensing' to action) is altogether disregarded. More importantly and relevant to this dissertation: **there is no transparent structural link between the Upper Echelon level and field intelligence, for example, and the very process that governs the two layers in determining a firm's attention and actions.**

Attention is reductionist and implies trade-offs. The firm's performance is determined by leveraging its structurally distributed attention as valuable 'computing power' such that the complexity and equivocality of market signals is neither ignored nor 'explained away' but optimally leveraged for advancing the firm's purpose (Shepherd et al., 2017). The critical question is: **how do bottom-up market signals connect with top-down leadership expectations and predictions to determine attention?** And, most critically, in a world that is distributed and discontinuous, how can such processes be defined so that bottom-up stimuli can feed and challenge top-down predictions and underlying prediction models so that a firm's attention is a real-time product of continuous hypotheses-testing? Hence, cognition and structure are inseparably relevant to firm performance.

Strategy is an inherently social property (Bouquet and Birkinshaw, 2011: 244), i.e. generative (Dong et al, 2016). The coupling of governance and operational channels (Ocasio and Joseph, 2005) - top-down (goal– and schema-driven) and bottom-up (stimuli/data-driven) - is essential to leveraging a firm's structurally distributed attention as competitive advantage. **The linkage of cognition and structure is one of ABV's most influential contributions. However, ABV falls short on process explaining attention as a 'social property'**: how can we explain Upper Echelon attention as a function of top-down/bottom-up sensing and sensemaking, for example?

For the power of the structure-cognition nexus to be of practical relevance, the concept of learning-centric capabilities must be introduced. The Dynamic Capabilities View is to some extent a logical and action-centric upshot of ABV. DCV 'actionizes' (through '*recombining'* resources) sensing (noticing) and sensemaking ('*seizing the opportunity*') in the context of dynamic environments.

2.1.3 Dynamic Capabilities View (DCV)

The Dynamic Capabilities View (DCV)[153] has become one of the most vibrant topics in the domain of strategic management (for a comprehensive bibliographic overview, see Vogel et al., 2013). Many different interpretations within DCV have emerged. Strategic change [154] and learning are at its core. Sensing and sensemaking of strategic opportunities in changing market environments, seizing the opportunity, and changing or recombining a firm's resource base are DCV's central concerns. (Teece et al., 1997)

According to Eisenhardt and Martin (2000), dynamic capabilities are rather non-idiosyncratic 'routines' or 'well-known processes such as alliancing, product development, and strategic decision making' (Eisenhardt and Martin, 2000: 1105).[155] In "high-velocity markets, they are simple, highly experiential and fragile processes with unpredictable outcomes." (Eisenhardt and Martin, 2000: 1105)

Helfat et al. (2007: 1), in contrast, juxtaposes dynamic capabilities to operational capabilities and routines. "Operational capabilities ['zero-level capabilities'] enable an organization to earn a living in the present" (Winter, 2003: 991)[156]. In contrast, dynamic capabilities concern change. "**A dynamic capability is the capacity of an organization to purposefully create, extend, or modify its resource base**." (Helfat et al., 2007: 1)[157] This dissertation firmly follows the Helfatian interpretation of dynamic capabilities in the form of (cognitive) meta-capabilities. But "where does the potential for long-term

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153 "**The dynamic capabilities view originates in spirit from Schumpeter's (1934) innovation-based competition where competitive advantage is based on the creative destruction of existing resources and novel recombination into new operational capabilities**." (Pavlou, P.A., and El Sawy, O.A. 2011. Understanding the elusive black box of dynamic capabilities. Decision Sciences, 42: 239–273; 241)

154 Not specifically strategic renewal.

155 "There are multiple paths (equifinality) to the same dynamic capabilities." (Eisenhardt and Martin, 2000: 1109) "So, while the specifics of any given dynamic capability may be idiosyncratic to a firm (e.g., exact composition of a cross-functional product development team) and path dependent in its emergence, **'best practice' exists for particular dynamic capabilities across firms**" (Eisenhardt and Martin, 2000: 1116) that "create resource configurations that have that advantage." (Eisenhardt and Martin, 2000: 1117)

156 Winter, S.G. 2003. **Understanding dynamic capabilities**. Strategic Management Journal, 24: 991-5: "Firms can accomplish change without reliance on dynamic capability, by means here termed 'ad hoc problem solving.' **Whether higher order capabilities are created or not depends on the costs and benefits** of the investments relative to ad hoc problem solving, and so does the 'level of the game' at which strategic competition effectively occurs." (p. 991; emphasis by DBK)

157 "For example, **Amazon's launch of the Kindle in 2006 involved sensing the impending threat** to its core bookselling business, seizing the opportunity through rapid development of a first-generation e-book reader, and then gradually reconfiguring its internal activities to ensure that the Kindle became an integrated part of its overall market offering." (Birkenshaw, J., Zimmermann, A. and Raisch, S. 2016. How do firms adapt to discontinuous change? California Management Review, 58: 36-58; 37; emphasis by DBK).

competitive advantage lie? It lies in using dynamic capabilities sooner, more astutely, or more fortuitously than the competition to create resource configurations that have that advantage." (Eisenhardt and Martin, 2000: 1117)

The nature of market dynamics (e.g., moderate, high velocity; disruptive;) is one of DCV's most critical moderators (see Vogel et al., 2013). But high velocity, for example, is a given in today's distributed and discontinuous market environments. **The increasingly distributed and amplifying nature of market-transforming forces cannot be overestimated. The corresponding need for re-defining the logic of organizing and developing new capabilities cannot be emphasized enough.**

To this day, predominant organizational design models "contain implicit biases toward growth" (Cameron and Zammuto, 1983: 359)[158]. But shock-prone and discontinuous environments require a new model preparing for strategic renewal to suppress entropy. Therefore, Schmitt et al.'s (2016: 363)[159] conceptualization of environmental scarcity[160] (inspired by Cameron and Zammuto, 1983; see below Table 1) is introduced as a more meaningful way of relating sensing and sensemaking, respectively, to the anatomy of market change and strategic renewal.

In certain environmental scenarios, sensing rather than sensemaking is the challenge, and vice versa. More importantly, the same perception (*sensing*) does not necessarily lead to the same interpretation and action plan (*seizing the opportunity* and *recombining resources* accordingly), for example. While slow and gradual market changes test in particular our sensing capability, more sudden changes are usually too obvious to miss but challenge a firm's sensemaking capability. There really is no objectively uncertain market environment: **uncertainty is an actor-dependent mental experience of facing**

[158] Cameron, K. and Zammuto, R. 1983. **Matching managerial strategies to conditions of decline**. Human Resource Management, 22: 359–375. https://doi.org/10.1002/hrm.3930220405

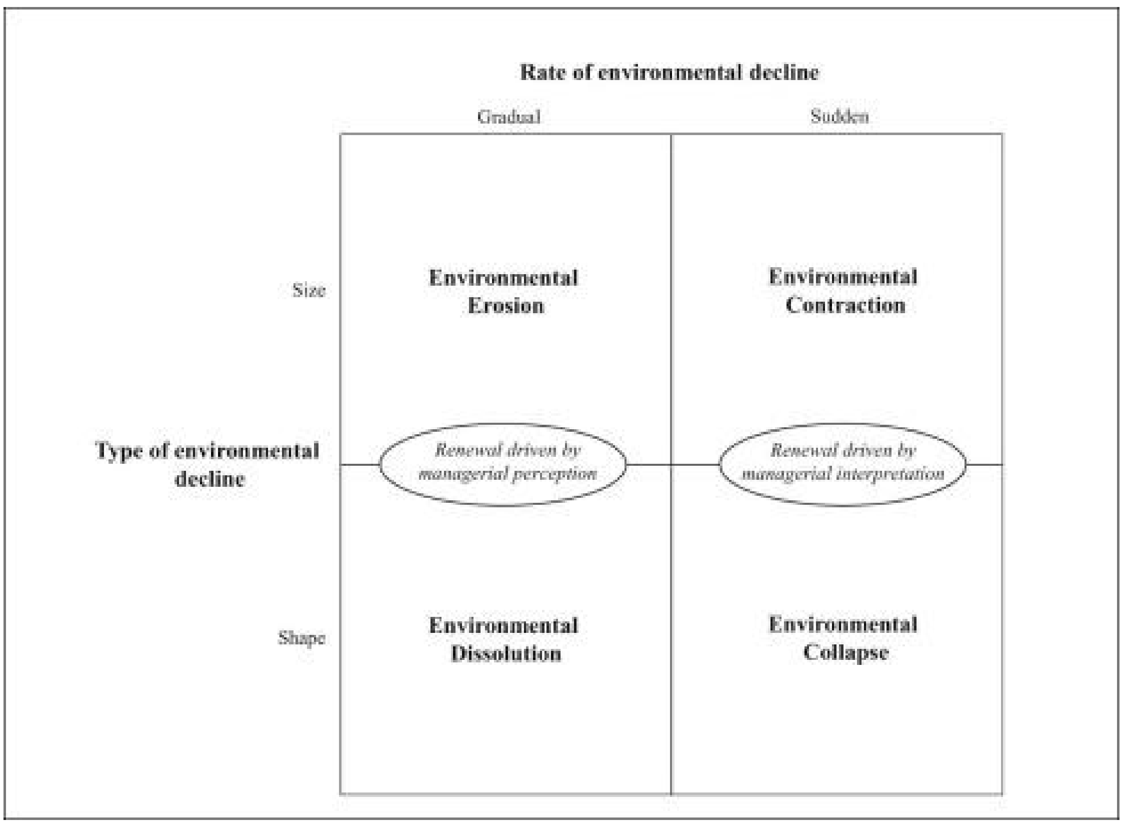
[159] See Schmitt, A., Barker, V.L., Raisch, S. and Whetten, D. (2016). Strategic renewal in times of environmental scarcity. Long Range Planning, 49: 361–376.

[160] "Based on population ecology theory (Aldrich, 1979; Carroll, 1985; Hannan and Freeman, 1977), environmental scarcity can be assessed relative to an organization's ecological niche […] Ecological niches can be described in terms of their size and shape (Zammuto and Cameron, 1985). Consequently, environmental scarcity relates to a niche's overall decline in size or shape (Cameron et al., 1987; Yasai-Ardekani, 1989) […] Aside from the type of environmental scarcity, the continuity, or rate at which the environmental decline occurs, is crucial (Cameron and Zammuto, 1983). The literature generally distinguishes between a gradual and a sudden environmental decline (Harrigan, 1980; Tushman and Anderson, 1986) […] Combining the type and the rate of decline allows us to distinguish four environmental scarcity situations (Zammuto and Cameron, 1985): environmental dissolution (gradual decline in shape); environmental erosion (gradual decline in size); environmental collapse (sudden decline in shape); and environmental contraction (sudden decline in size)." (Schmitt et al., 2016: 363)

one's very limitations of sensemaking, i.e. the ability to internally attribute probabilities to external states in form of a **Markov blanket** (see 1.7.3; p. 83).

As will be discussed as part of the control variables in in the Particular Empirical Part, the decline in market size may be gradual while the strategic challenge is still one of interpretation/sensemaking, contrary to the elegant classification that Schmitt et al. (2016: 363) propose. Therefore, decline in the print industry has been defined as '**entropic erosion**', emphasizing the need for *sensemaking* rather than *sensing*.

Table 1: Environmental dynamics and strategic renewal



Schmitt, A., Barker, V.L., Raisch, S. and Whetten, D. (2016: 364)

Learning and innovation are at the heart of DCV. Ambidexterity, defined as a company's simultaneous ability to exploit cash-flow in existing product markets (operational capabilities) while exploring the pursuit of innovation around future sources of growth is not "a complement to the dynamic capabilities perspective" (Birkenshaw et al., 2016: 37) but is a dynamic capability in its own right (O'Reilly and Tushman, 2008). It is tempting to address ambidexterity through a *paradox lens* (Smith, 2014; Smith and Lewis, 2011). A learning paradox, according to Smith and Lewis (2011: 383) "surface[s] as dynamic systems change, renew, and innovate. These efforts involve building upon, as well as destroying, the past to create the future".[161]

In 'Boundaries' (see 1.6), the paradox lens has been rejected. Indeed, tension, contradiction, and competition between organization-level objectives, such as exploitation and exploration, for example, are real but in a world that is both distributed and discontinuous there is no placeholder for the very persistency of contraction that defines at its core a paradox[162]. Balancing 'strategic control' with 'financial control' (Hitt et al., 1996).[163]

At any point in time, a firm is challenged to balance financial with strategic control. There is no either or. It is a duality, a continuous 'balancing act'. **Duality management is a dynamic capability, i.e. a non-operational meta-capability that is (1) primarily concerned with the extension and recombination of the firm's resources and (2) requires a cognitive distance to exploitation**. And no hierarchical layer is better positioned to assume this duality management responsibility than the board of directors.

The stronger and sudden the impact of environmental scarcity, the higher the urgency to act and, hence, the stronger the tendency for strategic renewal to be 'financial control' centric as the existing resource base is too trapped in the past to afford (un)learning. At this stage of the firm's lifecycle, emphasizing financial control – assuming the financial resources are in place – must be the right strategic choice.

However, as financial control develops its very own dynamics and bottom-up stimuli are deliberately de-emphasized during this initial phase of strategic renewal, the danger is that the connectivity between top-down predictions and bottom-up stimuli breaks down altogether over time. Consequently, Upper Echelon is in danger of surrendering strategic control and stay in the 'comfort zone' of financial control.

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161 *Belonging paradoxes* "arise between the individual and the collective". *Organizing paradoxes* arise from "tensions between collaboration and competition". *Performing paradoxes* "stem from the plurality of stakeholders and result in competing strategies and goals." (Smith and Lewis, 2011: 383)

162 "We define paradox as contradictory yet interrelated elements that exist simultaneously and persist over time." (Smith and Lewis, 2011: 383) "**We define paradox as persistent contradiction between interdependent elements**. (Schad et al., 2016: 10)

163 "[E]ngaging in acquisitions and divestitures emphasize financial controls, deemphasize strategic controls, and thereby produce less internal innovation. Furthermore, these firms are likely to seek external innovation to gain short-term benefits in competitive advantage" (Hitt et al., 1996: 1084) but lack the ability to organically innovate, often with potentially lasting negative consequences for firm performance to the point that eventually firm survival is at stake.

*A consistently reliable indicator for the '**financial control trap**' is when bankers instead of team members from hierarchy-levels closer to resource markets (e.g., clients, partners, technologies) are attending board meetings to advocate 'field-level' inspired insights as a basis for Upper Echelon strategic sensemaking, emphasizing to engage in acquisitions and divestitures as a basis to extend and recombine the firm's resource base.*

Ensuring a sustainable balance between strategic and financial control and avoid the trap of 'financial control' is a mandate that the CEO-led executive leadership cannot be solely entrusted with. It is at this critical juncture that the board must exercise a meta-role supported by meta-capabilities. **Indeed, balancing financial vs. strategic control is a critical board responsibility and is established as a dynamic board capability, moderated by environmental scarcity.**

Contrary to Birkenshaw et al. (2016: 36) view that "it is not possible to identify a universal set of dynamic capabilities", this dissertation establishes universal dynamic board capabilities. The non-executive 'meta-management' of tension between opposing logics (duality management) - empowered by cognitive capabilities such as sensing and sensemaking - is the very essence of the board's strategic mandate in discontinuous and distributed markets.

While there has been lately a shift in DCV from behavioral to cognitive interpretations (Helfat and Martin, 2015[164]; Helfat and Peteraf, 2015), so far, the cognitive focus remains firmly limited to the managerial level. This dissertation's underlying core thesis is that the board of directors will have to assume a critical strategic (meta/cognitive/non-operational) role and must be embraced as a firm's core competitive advantage. Sensing and sensemaking are established as universal dynamic board capabilities: *duality management in the form of real-time dynamic and continuous balancing* of (a) *exploitation vs. exploration* and (b) *financial vs. strategic control*. Environmental scarcity is a critical moderator but makes the meta-capabilities no less universal.

This dissertation is the first ever contribution to:

(1) **establish dynamic board capabilities as a firm's critical meta-capability** determining firm performance and survival; and

[164] "As identified by Adner and Helfat (2003), three core underpinnings of dynamic managerial capabilities provide the capacity to direct strategic change: managerial cognition (Huff, 1990), managerial social capital (Burt, 1992), and managerial human capital (Becker, 1964)." (Helfat and Martin, 2015: 1282)

(2) **operationalize sensing and sensemaking at the board level in form of duality management**, balancing opposing (but not necessarily contradictory) logics.

DCV has been impactful from an ideation as well as meta-conceptional point of view. However, DCV has not addressed the black box of operationalizing the concept of sensing and sensemaking. DCV is concerned with 'tacit knowledge' and 'organizational processes' (Teece et al., 1997: 524) but it remains rather opaque as to how firms can translate it into practice. It remains indispensable to operationalize this black box (Pavlou and El Sawy, 2011).

2.1.4 Enactivist Approach (EA)

"Sense-making=enaction. Sensemaking is viable conduct. Such conduct is oriented toward and subject to the environment's significance and valence. Significance and valence do not pre-exist 'out there', but are enacted, brought forth, and constituted by living beings. ***Living entails sense-making, which equals enaction****".*
(Thompson, 2007: 158; emphasis by DBK)[165]

Indeed, the essential question is **how the firm brings forth 'significance and valence', which does not pre-exist but is the result of action-centric and socially constructed engagement with the 'outer world' –** i.e. assigning probabilities to external states in form of a Markov blanket. This 'significance and valence' then lays the foundation for generating 'shared meaning' and 'shared expectations', i.e. unique interpretation models underlying firm performance and survival.

As the organization is sensing and making sense of the environment, in fact, the organization engages in enacting the environment.[166] Enactment and sensemaking are purpose-directed, goal-oriented, and action-centric social processes of constructing reality, i.e. revealing meaning for a given purpose and goals. Daft and Weick (1984: 287) differentiate between '*environment-driven* and *interpretation-driven*' approaches to strategy-making.[167] Essentially, to be *environment-driven* in a discontinuous world is

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165 "***Emergence of a self entails emergence of a world***. The emergence of a self is also by necessity the co-emergence of a domain of interactions proper to that self, an environment or *Umwelt*." and "***Emergence of a self and world = sensemaking***. The organism's environment is the sense it makes of the world. **The environment is a place of significance and valence**, as a result of the global action of the organism. (Thompson, 2007: 158; emphasis by DBK)

166 "**I use the word enactment to preserve the fact that, in organizational life, people often produce part of the environment they face** (Pondy & Mitroff, 1979, p.17). I like the word because it suggests that there are close parallels between what legislators do and what managers do. Both groups **construct reality through authoritative acts**." (Weick, 1995: 30-31; emphasis by DBK)

167 "Daft and Weick (1984) **differentiate between environment-driven and interpretation-driven cause-effect beliefs about the environment**. In environment-driven frames, top managers experience environments as concrete, hard, measurable, and determinant. They therefore first seek to identify environmental demands and then develop strategies in response to them. Top managers thus assume the environment to determine strategy. Such **environment → strategy beliefs represent deterministic logics** (Fahey and Narayanan, 1989). On the other hand, top managers of firms confronting more unstable or unanalyzable environments are thought 'to construct, coerce, or enact a reasonable interpretation that makes previous action sensible' (Daft and Weick, 1984: 287, emphasis added). Thus, they **attempt to construct their environments through their strategies rather than developing strategies in response to environments** (Lyles and Schwenk, 1992), resulting in **strategy → environment beliefs**, or proactive logics (Fahey and Narayanan, 1989)." Nadkarni and Barr, 2008: 1398; emphasis by DBK)

entropy-bounding. Perception and sensemaking are consequently incapacitated by Third-Party stimuli.

Action precedes perception (Clark, 2016). "*It is this initial implanting of reality that is preserved by the word enactment*." (Weick, 1979, quoted in Sandberg and Tsoukas, 2015: S9; emphasis by DBK) [168] Despite Weick's strong influence on strategic management research [169], to this day, the *environment-driven* approach remains prevalent as 'uncertainty' and 'unpredictability' generally dominate perception.

According to 'strategic choice' theory (Child, 1972) firms choose their environmental domains [170], and according to 'environmental determinism' (Aldrich, 2008) the organizational population evolves as a function of environment-controlled selection and retention processes.[171] "Most researchers seem to place themselves somewhere between these polar views. Despite the heated discussion, however, neither the strategic choicers, nor the environmental determinists, nor those in between, **question the pivotal notion of environments as independent, external, and tangible entities**." (Smircich and Stubbart, 1985: 725; emphasis by DBK) [172]

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[168] "Weick's notion of enactment helps us to understand **the "strange" sensemaking loop of forward action and retrospective deliberation**. He argued that sensemaking is usually thought to involve activities of negotiations between people as to what is out there. Less prominent in these analyses is the idea that people, often alone, actively put things out there that they then perceive and negotiate about perceiving. ***It is this initial implanting of reality that is preserved by the word enactment*** (Weick, 1979, p. 165; [Italic] emphasis added)." (Sandberg and Tsoukas, 2015: S9; bold emphasis by DBK)

[169] "Weick (1979) pointed out that **people 'enact' their environments; by this, he meant that people's beliefs and expectations define what they regard as relevant, and so beliefs and expectations define what parts of task environments draw people's notice**. Deciding that certain markets and prices are worth scanning, executives may assign subordinates to monitor these markets and prices, thereby making them part of their organization's foreground. But no organization can afford to monitor everything, so by not assigning subordinates to monitor other markets and prices, the executives are implicitly defining a background (Normann, 1971)." (Starbuck and Milliken, 1988: 45; emphasis by DBK)

[170] "**Child argues that organizations can select their environmental domains**, that environmental forces are not so confining that they cannot be outflanked or sometimes even safely ignored." (Smircich and Stubbart, 1985: 725; emphasis by DBK)

[171] "**Aldrich believes that 'environments' are relentlessly efficient in weeding out any organization** that does not closely align itself with environmental demands. He doubts that many organizations self-consciously change themselves very much or very often, or that the conscious initiatives by organizations are likely to succeed." (Smircich and Stubbart, 1985: 725;) This view is firmly rejected.

[172] Sandberg and Tsoukas, 2015: "Another fairly common critique is that [sensemaking perspective] is **too subjectivistic, in that it claims that people in organizations "enact" their environment to their own wishes** (e.g., Child, 1997; Clark, 2004; Whittington, 1988). For example, Child (1997, p. 54) has criticized the strand of enactivist research generated by Smircich and Stubbart (1985) for viewing the strategic environments of organizations as "wholly enacted through the social construction of actors." According to Child (1997, p. 55), "environments have properties which simply cannot be enacted by organizational actors"—properties that significantly constrain what and how environments are enacted. Following Whittington (1988, p. 528), examples of such environmental properties are "the social institutions of capitalism—firms, markets and a state guaranteeing the rights of property." **This critique,**

Organizations socially construct (enact) their environment in form of 'shared meaning' and 'shared expectations' through action. Indeed, action is central to enactment. "**People receive stimuli as a result of their own activity, which is suggested by the word enactment**." (Weick, 1995: 32; emphasis by DBK). This is essential to the 'free-energy principle': actions generate stimuli to minimize prediction error.

Environment is never fixed but a dynamic co-construct of organizational action an perception. Environment is "made available to experience" (Thompson, 2007: 15). It is a continuously circular process.[173] Every organization chooses – akin to holding a torch into the darkness – which environmental features and forces to attend to and act upon. It is the uniqueness of the torch's action-centric goal-directedness that determines environmental significance - reality. In fact, the Weickian torch is a form of assigning probabilities to external states - a Markov blanket.

The Markov blanket separates the inner and outer worlds. From the inner side of the 'veil' we attribute probabilities to external states. Through our actions we continuously test-challenge those probabilities to minimize error and surprise. **Environment is not only dynamic (enacted) by definition but should be expressed as a Markov blanket**. Indeed, the more 'explainable' and 'shareable' a firm's Markov blanket, the stronger the error-minimization process, the lower entropy-enforcing surprises.

"The problem is that there are too many meanings, not too few. **The problem faced by the sensemaker is one of equivocality, not one of uncertainty. The problem is confusion, not ignorance**." (Weick, 1995: 27; emphasis by DBK). The critical consideration is how an organization trans-morphs the sensemaking activity of the individual into a firm's environmental enactment as a basis for continuous strategic renewal. Enactment is essentially an (interactive and generative) social learning (sensemaking) process. (Crossan et al., 2003)

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however, seems misplaced. To argue that environments are enacted, as [sensemaking perspective] researchers do, does not mean that environments are fabricated at will. Phenomenologically speaking at least, it rather means that **environments are brought to actors' awareness—are disclosed in particular ways**. As Thompson (2007, p. 15) remarked, the environment is disclosed—namely it is made available to experience". (Sandberg and Tsoukas, 2015: S20-S21; emphasis by DBK)

[173] Peter Godfrey-Smith (2016: 82) captures biology's evolutionary foundation for this circular causality: "The evolution of muscle, derived from tiny fiber-like elements inside cells, created a new means by which life impresses itself on the world. **All living things affect their environment by making and transforming chemicals, and also by growing and sometimes by moving, but it is muscle that gives rise to rapid, coherent action on large spatial scales**. It makes possible the manipulation of objects, the deliberate and rapid transformation of what is around us." (Godfrey-Smith, P. 2016. Other minds: The octopus, the sea, and the deep origins of consciousness. New York: Farrar, Straus and Giroux)

Dong et al. (2016) elegantly address this micro-macro dichotomy: "While hypothesis setting is an individual activity, hypothesis testing is an organizational activity." (Dong et al., 2016: 112) According to Smircich and Stubbart (1985: 724; emphasis by DBK),

"*organization members actively form (enact) their environments through their social interaction. A pattern of enactment establishes the foundation of organizational reality, and in turn has effects in shaping future enactments.* ***The task of strategic management in this view is organization making — to create and maintain systems of shared meaning that facilitate organized action***."

Therefore, it is impossible to address enactment at the firm level without due consideration to hierarchy (structure) or, more precisely, the coupling of governance and operational channels, top-down/bottom-up – in circular causality (*recognition density*, see below). In addition, due consideration must be given to capabilities such as sensing (making available for sensemaking action-generated stimuli) and sensemaking (continuously top-down re-assigning probabilities to predictions and re-evaluate prediction models on the basis of bottom-up stimuli). Organizations are challenged to better distinguish how their actions differ from those of others in generating industrial (environmental) change.[174]

Environmental enactment is both an organizational meta-capability as well as a critical phenomenological assumption: reality is action-centric and 'lives' in our mind (the brain's software). **Environment does not exist actor-independent but is the product of generative and social sensing and sensemaking processes.**

This leads us to the prediction-processing framework (PPF), which has been gaining momentum in theoretical neuroscience[175].

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[174]**The sensing system of certain types of fish is of interest in this regard**: "Some fish, for example, send out electric pulses for communication with other fish, and also electrically sense other things going on around them. The self-produced pulses will affect their own senses, though, and it may be difficult for a fish to distinguish the pulses it has made from electrical disturbances that are due to external things. To deal with the problem, whenever a fish emits a pulse it also sends a copy of the command around to the sensing system, enabling that system to counteract the effect of the pulse it has produced. The fish is tracking and registering the distinction between "self" and "other", between the effects on its senses of its own actions and the effects of events going on around it." (Godfrey-Smith, 2016: 83)

[175]The prediction processing framework is increasingly entering the mainstream; see: Cepelewicz, J. July 2018. **To make sense of the present, brains may predict the future**. Quanta Magazine; downloaded on September 30, 2018: https://www.quantamagazine.org/to-make-sense-of-the-present-brains-may-predict-the-future-20180710/); see also: Raviv, S. December 2018. **The genius neuroscientist who might hold the key to true AI**. Wired Magazine; downloaded on January 5, 2020: https://www.wired.com/story/karl-friston-free-energy-principle-artificial-intelligence/)

2.1.5 Prediction-processing framework (PPF): Free-Energy Governance

“The prediction error minimization theory is in many respects difficult to classify: it is both mainstream and utterly controversial […]
Within cognitive science and machine learning, versions of the prediction error minimization scheme are, as mentioned, widely acknowledged. Parts of the scheme have roots in connectionism in particular in the construction of neural networks with back-propagation algorithms, which are error correcting ways of classifying incoming data […] However, it differs in central aspects from back-propagation in not being supervised (so it does not need labelled training data). ***Prediction error minimization uses models that generate data in a top-down fashion rather than classify the bottom-up data****, in addition use of generative models works much better in a deep hierarchical setting.” (Hohwy, 2013: 7-8; emphasis by DBK)*

All previously elaborated theoretical frameworks (UEV, ABV, DCV, and partly EA) are in essence top-down approaches, emphasizing directly or indirectly the pre-eminence of Upper Echelon (however, not necessarily, consistently or explicitly including the board of directors).

*”****Hierarchies detach top managers from the realities that their subordinates confront****, so top managers' ideologies can diverge from the perceptions of low-level personnel [...] Top managers' macroscopic points of view let them see more ideological elements than their ideologies can incorporate, and* ***their secondhand contact with most events and their spokesperson roles encourage them to simplify and rationalize their ideologies*** *(Axelrod, 1976). Public statements encourage distortion while committing the speakers to their pronouncements.” (Starbuck, 1983: 97; emphasis by DBK).*

Strategic renewal research (with few exceptions such as, for example, Floyd and Lane, 2000; Crossan et al., 2003; Dong et al., 2016; and Schmitt et al, 2018) **has not addressed the hierarchical disconnect of the top-down/bottom-up dichotomy**.[176] While the

[176]“Most theory and research on attention in organizations invokes top-down processes, whether driven by goals (Cyert and March 1963, Greve 2008), identity (Hoffman and Ocasio 2001), cognitive models (Kaplan 2008), or logics of action (Thornton and Ocasio 1999). **Bottom-up processes, or data- or stimulus-driven processes, have received less research attention**, although they are the focus of ecological perspectives (Hansen and Haas 2001, Hsu 2006) …. The interaction of top-down and bottom-up attentional processes is also implicit in the Weick and Sutcliffe (2006) concept of the ‘quality’ of organizational attention and in the Rerup (2009) analysis of **attentional triangulation, combining**

enactment approach (EA) is a very potent framework in terms of bringing the individual back into the firm-level analysis, it fails explaining the 'processual black-box' of not only how 'shared meaning' is constructed but, more importantly, how it is optimized in terms of enhancing the performance and sustainability of strategic renewal.

In management science, the epistemological origins of the predictions-processing framework (PPF) can be traced to (1) Argyris' theory of action perspective (Argyris and Schön, 1974; Argyris, 1976), specifically the concept of '**double-loop learning**' defined as a form of "learning that challenges the existing routines and status quo" (Argyris, 2005: 261) and (2) Starbuck's (1983) conception of '**organizations as action generators**'.

Starbuck and Milliken (1988: 45; emphasis by DBK) have captured the challenge that PPF attempts to resolve:

"The influence of executives' definitions of what matters may gain strength through the uncoupling of executives' decisions about what to observe from their subordinates' acts of perception. This uncoupling and the asymmetry of hierarchical communications impair feedback, and ***so executives' perceptions adapt sluggishly to the actual observations made by their subordinates****. Organizations encourage the creation of formalized scanning programs; they assign specialists to monitor foreground events [[177]], and they discourage subordinates from reporting observations that fall outside their assigned responsibilities. Even when subordinates do notice events that have been formally classified as background, they tend not to report these upward, and* ***superiors tend to ignore their subordinates' messages*** *(Dunbar and Goldberg, 1978; O'Reilly. 1983; Porter and Roberts, 1976)."*

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attentional stability (top-down), attentional vividness (bottom-up), and attentional coherence (combining both)." (Ocasio, 2011: 1288; emphasis by DBK)

[177] Such 'scanning programs' are equivalent to Ringier's international alignment teams: "An important question is: 'how do you enable that we can even manage at this speed of transformation and cope with its complexity?' We are very successful in having international alignment teams. **We have someone who can track down all the trends for the entire publishing process and drive forward projects in this particular area**, for example. We have the same set-up for marketplaces as well as tech and data." (Bassler, 2019; Annex IV; emphasis by DBK) "Such programming can easily become maladaptive and lead to behaviors both ineffective and inefficient, giving rise to the '**trained incapacity**' that Veblen (1904) called attention to long ago" (Scott and Davis, 2007: 63; emphasis by DBK).

Organizational attention is top-down directed but must be challenged by bottom-up data and action-generated stimuli, generating learning in form of error-minimization.[178] Bottom-up initiatives and stimuli are routinely filtered and time-delayed by organizational hierarchies if they ever reach the top.

”Although some lower-level managers and engineers were acutely aware of the electronic revolution in the world at large, this awareness did not penetrate upward, and the advent of electronic calculators took Facit’s top managers by ***surprise****.” (Starbuck, 1983: 92; emphasis by DBK)*

More importantly, corporate failures too often prove the fact that even if relevant stimuli reach the top, they are unlikely to timely change predictions or prediction models.[179] **Unlearning is the true learning challenge**.[180]

*“**Unlearning seems to be a distinctly social phenomenon**, and it may be predominantly organizational. Theories about individual people omit unlearning: the theories say a brain can replace a stimulus-response pair immediately by learning a new stimulus or a new response. But **organizations wait until stimulus-response pairs have been explicitly disconfirmed before they seriously consider alternative stimuli or responses,** at least for the central molecules in their top managers' ideologies. The need for unlearning arises from ways organizations typically differ from individual people: (a)*

[178] “Learning is here defined as the detection and correction of errors, and error as any feature of knowledge or of knowing that makes action ineffective. Error is a mismatch: a condition of learning, and matching a second condition of learning. **The detection and correction of error produces learning and the lack of either or both inhibits learning**.” (Argyris, 1976: 365; emphasis by DBK)

[179] “Many organizations drift along, perceiving that they are succeeding in stable environments, until they suddenly find themselves confronted by existence-threatening crises. Most of the organizations my colleagues and I have studied did not survive their crises; but in every case of survival, the reorientations included wholesale replacements of the top managers, and we infer that survival requires this. **Crises also bring unlearning when people discover that their beliefs do not explain events, that their behavior programs are producing bad results, that their superiors’ expertise is hollow**. Although this unlearning clears the way for new learning during reorientations, it so corrodes morale and trust that many organizations cannot reorient.” (Starbuck, 1983: 100; emphasis by DBK) “Their research led Starbuck, Greve, and Hedberg (1978: 114) to conclude that ‘**the processes which produce crises are substantially identical to the processes which produce successes**.” (Starbuck and Milliken, 1988: 38)
“At least two important sets of variables can be altered to increase the effectiveness of learning, no matter at what point the learning is to occur. One is the degree to which interpersonal, group, intergroup, and bureaucratic factors produce valid information for the decision makers to use to monitor the effectiveness of their decisions. The other is the receptivity to corrective feedback of the decision-making unit - that is, individual, group, or organization.” (Argyris, 1976: 365)

[180] See also Boncheck, M. **Why the problem with learning is unlearning**. Harvard Business Review Digital Articles. November 2016:2-4.
https://search.ebscohost.com/login.aspx?direct=true&db=bsu&AN=120625343&lang=de&site=eds-live. Accessed September 30. 2018.

Organizations rely on action generators, which add inertia and impede reflection*, (b) Organizations emphasize explicit justification, which rigidifies and perfects their rationality, (c) To facilitate documentation and communication,* ***organizations use perceptual categories that destroy subtlety and foster simplification*** *(Axelrod, 1976; Bougon et al., 1977).”* (Starbuck, 1983: 96; emphasis by DBK).

Any introduction to PPF must start with Bayesian inference[181]. “This generative model is decomposed into a **likelihood** (the probability of sensory data, given their causes) and a **prior** (the a priori probability of those causes).” (Friston, 2010: 129; emphasis by DBK). Strategy process is about assigning probabilities to selected external states leveraging past experience (akin to a Markov blanket). It is a continuous interplay “between raw data seeking an explanation (bottom-up) and hypotheses seeking confirmation (top-down)” (Clark, 2016: 29, quoting Shipp, 2005: 805).[182] The challenge is not only building intra-firm connections between Upper Echelon’s top-down predictions and field management’s bottom-up stimuli (data) but **optimizing the top-down/bottom-up process at every layer of the hierarchy in form of ‘feedback connections’.**

[181]“In probability theory and statistics, Bayes' theorem (alternatively Bayes' law or Bayes' rule) describes the probability of an event, based on prior knowledge of conditions that might be related to the event. One of the many applications of Bayes' theorem is Bayesian inference, a particular approach to statistical inference. When applied, the probabilities involved in Bayes' theorem may have different probability interpretations. Bayes' theorem is named after **Reverend Thomas Ba**yes (/beɪz/; 1701–1761), who first **provided an equation that allows new evidence to update beliefs** in his ‘An Essay towards solving a Problem in the Doctrine of Chances’ (1763). It was further developed by Pierre-Simon Laplace, who first published the modern formulation in his 1812 "Théorie analytique des probabilités". (This summary are fragments of a Wikipedia contribution, downloaded on November 3, 2018: https://en.wikipedia.org/wiki/Bayes%27_theorem); “Bayesian brain hypothesis: the idea that the brain uses internal probabilistic (generative) models to update posterior beliefs, using sensory information, in an (approximately) Bayes-optimal fashion.” (Friston, 2010: 129)

[182]“However, the idea goes **beyond a simple analogy with trial-and-error practices**. In fact, it profoundly reverses how we conceive our relation to the world through the senses. A **standard conception** is that the senses convey a rich signal that somehow represents worldly states of affairs, which the brain is passively soaking up in a bottom-up manner. If there is any top-down interpretation of the incoming data, then this is mere feedback from the cognitive system on the key bottom-up signal. **On the prediction error minimization view**, this picture is reversed. The rich representation of the worldly states of affairs is signaled in the top-down predictions of sensory input, maintained by the perceptual hierarchy in the brain. These predictions, as it were, *query* the world and dampen down predicted sensory input. The result is that only prediction error is propagated up through the system in a bottom-up fashion, and aids in revision of the model parameters… The functional role of the bottom-up signal from the senses is then to be feedback on the internal models of the world: ‘*Cortical hierarchies are trying to generate sensory data from high-level causes. This means the causal structure of the world is embodied in the* ***backward connections****.* ***Forward connections*** *simply provide feedback by conveying prediction error to higher levels. In short, forward connections are the feedback connections*.’ (Friston 2005: 825)” (Hohwy, 2013: 47; emphasis by DBK)

Understanding the brain as a probabilistic (Bayesian) prediction-machine that generates actions to produce stimuli to be perceived to eventually qualify or refute predictions and, if necessary, change the underlying prediction models, may analogously enrich our understanding of the circular causality defining the relationship of structure, cognition, capabilities, and strategic renewal. This is the essence of sensemaking:[183] the quest for optimizing the match between worldview and 'world-stimuli' (through action-generated dissonance-detecting error- or surprise-minimization, i.e. minimizing the mathematical difference between prediction and its accuracy). In fact, **'surprise-minimization' should be the underlying 'game-logic'** of a firm's performance/survival-optimizing strategy in a discontinuous and distributed world.

We start with a worldview: a map - a Markov blanket. It is the map guiding the torch of where to 'light up' – i.e. probability-test –the firm's purpose-directed path as we seek to minimize surprise. Through purpose-directed actions, stimuli are generated as we seek novelty to enrich our map (i.e., blanket) and continuously improve the probability assignment of the Markov blanket's external states.

"**Our brain is poised to seek novelty and surprise rather than to avoid uncertainty**." (Clark, 2016: 30; emphasis by DBK) Surprise is a measure of error. We need error feedback loops to adjust predictions and, more importantly, to eventually update prediction models ('double-loop-learning').

Error messages, often in the form of rather soft signals, occur at the firm's bottom/stimuli-level close to resource markets (clients, products, and new technologies, e.g.) long before top-leadership has 'any sense' of a challenge to existing predictions and underlying prediction models. Every story of strategic and transformative renewal is too often and retrospectively a story of 'dominant logics'-trapped leadership admitting having missed and ignored relevant and plainly accessible signals early on.[184]

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[183]"Sense making can be viewed as a recurring cycle comprised of a sequence of events occurring over time. The cycle begins as individuals form unconscious and conscious anticipations and assumptions, which serve as predictions about future events. Subsequently, individuals experience events that may be discrepant from predictions. **Discrepant events, or surprises, trigger a need for explanation**, or post-diction, and, correspondingly, for a process through which interpretations of discrepancies are developed. Interpretation, or meaning, is attributed to surprises. Based on the attributed meanings, any necessary behavioral responses to the immediate situation are selected. Also based on attributed meanings, understandings of actors, actions, and settings are updated and predictions about future experiences in the setting are revised. **The updated anticipations and revised assumptions are analogous to alterations in cognitive scripts**." (Louis, M.R. 1980. Surprise and sensemaking: what newcomers experience in entering unfamiliar organizational settings. Administrative Science Quarterly, 25: 226-251; p.241; emphasis by DBK)

[184] To this point, Wurtzel (2012: 212) aptly quotes Leo Tolstoy: "*The most difficult subjects can be explained to the most slow-witted man if he has not formed any idea of them already; but the simplest*

"My premise is that there can be no "rules" or "formulas" for business strategy. Strategies are situational… Behind every strategy, however, lie ***Habits of Mind*** *of those who developed the strategy…Habits of Mind are not situation-specific, but ways of thinking about one's organization in relation to the world in which it exists. It is theses Habits of Mind that drive strategic decision-making and lead either to success or to failure" (Wurtzel, 2012: 19; emphasis by DBK)* [185]

Generative prediction-error-processing lays the very foundation for Free-Energy Governance as a new nexus of structure, cognition, and capabilities. Today's **organizations are generally an artefact of top-down centralization geared towards minimizing uncertainty in pursuit of environmental adaptation.** Firms develop a 'risk-averse' tendency and preference for being 'fast-followers' rather than first-line innovators. This mode of organizing, however, is increasingly struggling in a discontinuous and distributed world.

Essentially, **top-leadership is operating too often on the basis of prediction models that are neither proprietary nor explainable** and therefore not challenged by bottom-up stimuli. This is a form of outsourcing 'predictions processing', i.e. surrendering 'strategic control' (Hitt et al., 1996), potentially with fatal consequences.

"Hence, we look for supervision either by employing external learning analogies, such as the computer programmer, or we look in vain for some kind of bootstrapping self-supervision…. We find the required additional constraints, the knowledgeable supervisor, in the world itself… ***The world is the truth****… Perhaps the mistake, in earlier conceptions of the problem of perception, was to look for a supervisor (a programmer or the system itself), which somehow knows the truth… The prediction error minimization approach cuts out the middleman and lets the supervisor be the truth*

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thing cannot be made clear to the most intelligent man if he is firmly persuaded that he knows already, without a shadow of doubt, what is laid before him."

[185] Concerning the Predictions-Processing Framework (PPF), five out of Wurtzel's twelve Habits of Mind can be considered PPF-foundational: "**Be Humble, Run Scared**: Continuously doubt your understanding of things. Business success contains the seeds of its own destruction."; "**Curiosity Sustains the Cat**: The world is constantly changing. Be open and curious and strive to learn from others."; "**Evidence Trumps Ideology**: In business, as in politics, decisions are too often based on unproven assumptions about what works and what doesn't. We all need operating assumptions about human nature, the economy, and the like, but when things do not work out as planned, we need to determine whether our assumptions were based on evidence or ideology."; "**Confront the Brutal Facts**: The worst person you can fool is yourself. Ignoring or denying reality does not help it go away."; "**Chase the Impossible Dream**: Do not be limited by…the "Tyranny of the OR". Be willing to embrace the "Genius of the AND". Two worthwhile goals that seem mutually exclusive can inspire an organization of "ordinary" employees to achieve extraordinary results." (Wurtzel, 2012: 20; emphasis by DBK)

itself…: perceptual content is given in our predictions and this is precisely what allows the world to deliver a supervisory signal." (Hohwy, 2013: 49-50; emphasis by DBK)

'**Optimization**' is central to PPF's free-energy principle and leads us to hierarchy. "This optimization makes every level in the hierarchy accountable to the others." (Friston, 2010: 129) While the generative sensemaking processes and capabilities are a critical performance element at every level of the hierarchy, the efficacy of such capabilities is determined by 'recognition density', i.e. 'message passing' and 'belief propagation' (Friston, 2010: 130) within and across organizational layers or business units.

It is '**recognition density**' where PPF's effectiveness in the organizational context most likely breaks down. Neither the bottom-up 'message passing' nor the top-down 'belief propagation' are unobstructed. We fail to appreciate how 'organizational friction' (high levels of free energy) compromises firm performance due to: (1) **top-down ('enforced') predictions and prediction models** that are not open to bottom-up challenge, (2) **weak top-down/bottom-up/lateral generative sensing and sensemaking** capabilities, (3) **lack of communication** and appreciation for language as 'the site for organization to emerge'.

'Recognition density' is not a matter of knowledge creation or transfer. But the very concern is: can 'sensing' information for the purposes of sensemaking un-obstructively *flow*? The concept 'knowledge' tends to imply that there is a finite 'product'. In the 'free-energy' context there never is a finite state of 'knowing'. It is a rather continuous flow of 'sensing' information that is passed on for purpose-directed sensemaking in pursuit of surprise-minimization. While the lateral dimension is certainly no less important than the 'top' and the 'bottom', **'lateral mechanisms' are but top-down/bottom-up within**. Therefore, neither middle-management nor team-dynamics are of concern (see Boundaries 1.6).

Recognition density determines *flow*, which in turn is determined by the following two '*categorical imperatives*':

(1) **First, Upper Echelon's prediction models and corresponding predictions must be 'explainable'**[186] and explicitly articulated and communicated top-down to be bottom-up challenged. What is the firm's Markov blanket? "[T]he senses do not give us a picture of the world directly; rather they provide evidence for checking hypotheses about what lies before." (Taylor and Van Every, 2000:

[186] Yan Yufik must be credited with the term 'explainable' in this context.

24; quoting Gregory[187],1966: 11) The language and communications layers are critical to firm performance and, eventually, its survival: "Heidegger's revolutionary proposal was that "it is in words and language that things first come into being and are." (Taylor and Van Every, 2000: 19)[188]

(2) **Second, each of the hierarchical layers must have formal and informal interfaces** that couple each layer to the next layer. If a given hierarchical structure of a firm has any legitimacy, then generative top-down/bottom-up sensing and sensemaking at every hierarchical level should equally make sense before an error message travels to the next level. There should not and cannot be any by-passing of hierarchical layers. In short, for the learning-driven prediction-processing organization to be effective, each hierarchy-layer must not only be engaged and empowered to test hypotheses but, more importantly, that layer must be cognitively and operationally coupled to the next layer. If any layer can be bypassed or excluded, then that layer has no organizational legitimacy and should be eliminated.

This is 'Free-Energy Governance': seeking novelty in a complex world while optimally leveraging - but certainly not avoiding – surprise and uncertainty in order to continuously optimize accuracy in prediction.[189] Indeed, "**[f]ree energy rests on a generative model of the world**". (Friston, 2010: 129; emphasis by DBK)

Any firm's environmental context is increasingly far too distributed and discontinuous for an organization to sustainably adapt to. For an organization to get a grip on its environment it must 'stay ahead of the game', which means enacting a worldview and exposing its goal-directed prediction models to action-generated and fallibility-testing environmental stimuli – in circular causality. "It is important to appreciate that prior expectations include **not just what will be sampled from the world but also how the world is sampled**." (Friston, 2010: 133; emphasis by DBK) Eventually, the firm's actions shape and transform environment.

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187 Gregory, R.L. 1966. **Eye and brain: the psychology of seeing**. New York: McGraw-Hill

188 "To a phenomenologist language is not a window through which to observe social reality but a canvas on which it gets painted…For him or her, the language of communication is not just a medium or means or instrument (although it is that too) but theme, because **it is in language that reality comes into being**." (Taylor and Van Every, 2000: 65-66); emphasis by DBK)

189"Biological agents must therefore minimize the long-term average of surprise to ensure that their sensory entropy remains low." (Friston, 2010: 127) "In short, the long-term (distal) imperative — of maintaining states within physiological bounds — translates into a short-term (proximal) avoidance of surprise." (Friston, 2010: 128) "This is where free energy comes in: free energy is an upper bound on surprise, which means that **if agents minimize free energy, they implicitly minimize surprise**." (Friston, 2010: 128; emphasis by DBK)

The smaller the number of hierarchical layers at any given point in time, the higher and more optimized predictions-processing. The stronger the ‘synaptic connections’ within and between the different organizational layers in form of ‘recognition density’, the more optimized the free-energy minimization process and, over time, the stronger the prediction models and ‘empirical priors’.[190]

The human brain ceaselessly engages in prediction-processing-error minimization, continuously building new and stronger synaptic connections. In fact, the brain’s plasticity is driven by one ‘categorical imperative’: free-energy (error) minimization. Organizations will never work as efficiently, but it is a target model worth approximating: **goal-directed, action-centric, ‘belief-propagation/message-passing’-enabling, and prediction-error-minimizing**. This is ‘Free-Energy Governance’ (FEG). The consequences for organizational design, environmental engagement, leadership capabilities, and strategy process are far-reaching.

PPF and FEG provide an entirely new perspective on all aspects of *organizing*. More importantly, PPF and FEG not only define strategy as hypothesis-testing (Dong et al., 2016) but provide a structure- and capabilities-lens defining the board’s role in strategy process. **The board of directors should not only serve as a trustee of the firm’s prediction models** but must proactively ensure that the models are explainable, continuously bottom-up challenged, and therefore timely evolve when predictions’ accuracy is failing, i.e. ‘free-energy’ is rising.

Therefore, **the board of directors must move beyond strategy’s content dimension and ensure that prediction-processing is empowered throughout the organization**. The board of directors’ essential focus should be to build and guide an organizational structure, a mode of environmental engagement, and cognitive capabilities that minimize (but not avoid) surprise.

For example, one could argue that corporate governance is caught in a certain PPF dichotomy: (1) the quest for novelty emphasizes the strategic and exploration-centric role of the board while (2) the avoidance of surprise and uncertainty is characteristic of the entrenched ‘hands-off, nose-in’ exploitation-monitoring board that is overly concerned with resisting risk, and therefore, is rather financial control centric.

The purpose of this dissertation is not to model when the one or the other governance logic is likely to dominate. In fact, all boards are likely to be caught in this field of

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[190]Empirical priors shape prediction model’s underlying ‘policies’ and principles.

dichotomist tension at some point in the firm's lifecycle. But, according to 'Free-Energy Governance', the board must assume a critical role as guarantor of top-down/bottom-up generative sensing/sensemaking processes across and within all hierarchical levels. Essentially, it is a (meta-) duality-management mandate.

Indeed, as previously summarized in this dissertation, the strategic role of the board has been controversially debated in the strategic management as well as corporate governance literature. In a world that is increasingly distributed and discontinuous, the question arises whether a firm can afford not to leverage the board's strategic role in a more systematic and forward- ('entropy-suppressing') rather than ex-post way. More precisely: what are the cognitive microfoundations that support the board's unique and complementary strategic role in form of duality-management?

2.1.6 Antagonistic neural networks perspective (ANNP)

Advances in neuroscience research - modelling the brain as "intrinsically organized into dynamic, anti-correlated functional networks"[191] - offers a fertile perspective that can potentially enrich our understanding of the board's unique role in strategic renewal. The Antagonistic Neural Networks Perspective (ANNP) is established and provides the neuroscientific basis for duality management: **managing the existing while contradicting the present to develop the future**. It is a form of organizational learning that strategic management literature has labelled ambidexterity (O'Reilly and Tushman, 2008): exploitation vs. exploration.

In neuroscientific terms, the antagonistic relationship is between two large-scale cortical networks - the task-positive network (TPN) and the default mode network (DMN)[192] – which, simply put, are neuroanatomical representations of top-management's day-to-day task-specific focus on exploitation (TPN) on the one side and the rather non-routine divergent and creative thinking that initiates exploration and strategic renewal (DMN)[193]. Both networks are antagonistic. They cannot be activated simultaneously: it is impossible 'to redesign (exploring) the plane while flying it (exploiting)'. But this is exactly what today's survival challenge is about.

The very distributed and discontinuous nature of today's market environments imposes strategic renewal as a continuous mandate. Therefore, an "over-emphasis on task-oriented leadership can prove deleterious to an organization: in particular when openness to new ideas, people, emotions, and ethical concerns are important to success." (Boyatzis et al., 2014:1)

This TPN/DMN antagonism - between task execution and divergent ('new') thinking - is a neurological representation of the contradictory demands that challenge corporate leadership as well as companies' sustainable (out)performance and survival. More importantly, it is this TPN/DMN antagonism that, according to the 'ambidexterity

[191] Fox, M.D., Snyder, A.Z., Vincent, J.L., Corbetta, M., Van Essen, D.C. and Raichle, M.E. 2005. **The human brain is intrinsically organized into dynamic, anticorrelated functional networks**. Proceedings of the National Academy of Sciences, 102: 9673-9678.

[192] "The TPN is important for problem solving, focusing of attention, making decisions, and control of action. The DMN plays a central role in emotional self-awareness, social cognition, and ethical decision making. It is also strongly linked to creativity and openness to new ideas." (Boyatzis, 2014:1)

[193] "Thus, our findings may indicate that individual creativity, as measured by the divergent thinking test, is related to the inefficient reallocation of attention, congruent with the idea that **diffuse attention is associated with individual creativity**." (Takeuchi et al., 2011: 681)

school' in management science (O'Reilly and Tushman, 2008), should be resolved through organizational design, i.e. by way of structurally separating exploitation activities from exploration ventures, in particular when the latter is concerned with 'discontinuous innovation'.[194]

This dissertation, however, is rooted in the belief that in a discontinuous and distributed world the marginal benefit of structural re-organizations and separating exploitation from exploration activities is rather sub-optimal or counterproductive. Competitiveness and survival are increasingly determined by the extent to which a system is rather less rules- or 'supervised-learning'-based. In fact, we have to move beyond 'structural supervision' (as ambidexterity advises). Exploration happens increasingly in real-time within exploitation. In effect, the emergence of the 'new' is essentially hypotheses-testing within the existing. (Khezri, 2020)

In a distributed and discontinuous world, **the real leadership challenge is to 'de-antagonize' exploitation and exploration.** According to the Free-Energy Governance (FEG) framework, responses to the TPN/DMN antagonism are not primarily a matter of organizational design and TMT qualities - as the ambidexterity school suggests (O'Reilly and Tushman, 2016) - but are a challenge of generative and continuous top-down/bottom-up prediction-error-minimization. In fact, once the TPN/DMN antagonism is conceived as a 'free-energy' challenge rather than one of organizational design (i.e., top-down directed 'division of labor and cross-unit interaction), it becomes obvious how entropy-bound organizational compartmentalization can be, suppressing the firm's full potential and cultivating 'skilled incompetence'.

Though neurologically antagonistic, exploiting the present while exploring the future should not be viewed as "separate but, rather, are interdependent and potentially compatible—mutually enabling and a constituent of one another." (Farjoun, 2010: 205)[195] The question remains: how to make continuous strategic renewal an integral facet of organizational life with the least requirement for structural re-organization - the latter being inevitably disruptive and rather performance-diminishing as numerous empirical studies have documented (see O'Reilly and Tushman, 2016).

In a distributed world, characterized by increasing equivocality - not so much in terms of uncertainty but too many meanings and signals to choose from - the modern

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194 See O'Reilly and Tushman (2016: 15-17); "[A] **strong separation between the past and the future can undermine the success of the new unit**." (O'Reilly and Tushman, 2016: 14)

195 "**Exploration and exploitation function as complements in generating organizational performance**." (Boumgarden, 2012: 589; emphasis by DBK)

organization will increasingly struggle without adopting a more cognitive (soft) lens for organizing. ‘Hard’ structures tend to increase ‘free-energy’ as they correspondingly harden the implied ‘reinforcement learning’ (as opposed to unsupervised learning) dimension. Overall, the firm’s attentional engagement and recognition density is challenged at every hierarchical layer, demanding for the ‘compensatory fit’ of ‘informal ties’[196].

The rise of the informal organization will increasingly shape the future study of strategy process. **The emergence of the ‘deep-learning‘ rather than ‘rules-based’ self-organizing firm [197] is here to stay.** Optimizing top-down/bottom-up generative processes, i.e. embracing strategy not as a top-down enforcement of content but as a bottom-up process of becoming (top-down predictions being challenged by bottom-up stimuli), is inviting scholars and business leaders alike to fundamentally question traditional forms of organizing, environmental engagement, and capabilities.

A distinctive feature of FEG is to explicitly embrace the firm’s formal as well as informal organizations [198] as equally relevant to ‘message passing’ and ‘belief propagation’. Hence, re-defining the formal role of the board is critical to the informal processes resulting from it. A new (organizational rather than just corporate) governance framework is required to resolve the TPN/DMN antagonism.

FEG’s cross-hierarchical connectivity logically concludes that managing the TPN/DMN antagonism is not a top-down challenge calling for structural compartmentalization but “is to simultaneously pursue exploration and exploitation at all levels of the organization”. (Boumgarden, 2012: 591)[199] In summary, we must conceive organization

[196] Gulati and Puranam (2009) have developed a theoretical framework linking the inconsistencies of formal and informal structures: “the informal organization can compensate for the formal organization by motivating a distinct but valuable form of employee behavior that the formal organization does not emphasize, and vice versa - an effect we label **compensatory fit**.” (Gulati et al., 2009: 422)

[197] While there have been a number of successful firms with unconventional models of *organizing* (such as Zappos, for example), **there is no one model of organizing. Every firm is challenged, in their very own ways, to tailor and optimize top-down/bottom-up recognition density.**

[198]“Formal organization comprises a set of prescribed roles and linkages between roles, for instance as set forth in job descriptions and reporting relationships (Scott 1998). Informal organization refers to the emergent patterns of individual behavior and interactions between individuals, as well as the norms, values, and beliefs that underlie such behaviors and interactions (Roethlisberger and Dickson 1939, Smith-Doerr and Powell 2005). However, there is a close link between formal and informal organization—**formal organization affects informal organization via its effects on who interacts with whom**.” (Gulati and Puranam, 2009: 427)

[199] This so-called **organizational vacillation** “emphasizes achieving high levels of both exploration and exploitation by temporally and sequentially alternating between organizational structures that promote either exploration or exploitation…perspective notes that the manager's task is to optimize long run performance, where performance is influenced by the levels of exploration and exploitation and not

as an informally deep-learning and self-designing compass. Any form of centralizing intelligence – at any hierarchical layer of the organization - is counterproductive, increasing free-energy, promoting entropy, and eventually capitulating to TPN/DMN's antagonistic forces.

"Deep learning enables computers to build complex concepts out of a simpler hierarchy of nested concepts. You can think of this as a series of chained algorithms. Each layer of the algorithm that performs a piece of the inference in succession, until the final layer provides the output." (Siebel, 2019: 43)

In essence, the 'governance' response to the TPN/DMN challenge is threefold:

> **(1) raising organizational awareness** for Upper Echelon's tendency to top-down extrapolating its dominant (supervised) knowledge structures, logics, and past experience as guide and predictor for future success; a fallacy that task-specific exploitation tends to reinforce (McKenzie et al., 2009: 213);
>
> **(2) embracing strategic renewal as a matter of continuous deep learning;** cultivating processes that empower the cross-hierarchical flow and processing of market stimuli as a basis for 'double-loop learning' (question the models that continue generating predictions);
>
> **(3) developing abductive attentional engagement** at every level of the organization as a basis for top-down/bottom-up prediction-error minimization. After "noticing an environmental change" it is essential "to question [one's] understanding of how the subsystems of the environment (e.g., technology and markets) and the organization (e.g., knowledge and goals) are linked" (Shepherd et al., 2017: 634)[200] without losing sight of the fact that environment is not objectively defined but a product of action-generated and socially constructed (shared) meaning and expectations.

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merely their degree of balance or simultaneity. **By vacillating between (or among) discrete formal organizational modes such as centralization and decentralization, the organization may increase dynamically the levels of exploration and exploitation beyond those achievable through an approach based strictly on a static design choice**." (Boumgarden et al., 2012: 588)

[200] "In some people, the urge to avoid risk is stronger than others, but the point here is that both risk and uncertainty tend to create anxiety, and decision-makers may try to eliminate this discomfort by categorizing circumstances too quickly. This immediately filters what is noticed, often quite unconsciously (Voss and Post, 1988). Stereotypes, preconceptions and well-established preferences further limit what is noticed (Johnson, 2006). The more experience a person has the more they are able to provide quick and plausible explanations for combinations of circumstances (Isenberg, 1986). Unfortunately, in complex situations with many interconnected variables, it is often the small details at the periphery, the weak signals that radically affect how a scenario plays out (Ansoff, 1975). These are the least likely factors to figure in the framing of an experienced manager trained to pay attention to what resonates with their historical success." (McKenzie et al., 2009: 213)

Since the human brain's TPN and DMN spheres are antagonistically related, the only way to embrace antagonism as duality is by integrating in circular causality top-down predictions and bottom-up stimuli. Effectively, the challenge is one of real-time vacillation (Boumgarden et al., 2012) between the emphasis of respective dual dimensions such as (1) exploitation vs. exploration and (2) financial vs. strategic control, for example.

Indeed, this '**real-time switching process**' cannot be relegated to a single person (e.g., CEO or Executive Chairman) or Upper Echelon as a team but must be the result of a deep-learning inspired process that relates top-down predictions and bottom-up data input in purpose-directed circular causality across the entire organization. Consequently, the board's unique DMN dimension cannot be ignored but must be integrated into this process.

At the very top, **the board of directors** - given its cognitive diversity in composition and cognitive distance to the firm's dominant TPN exploitation logics - **emerges as a monitoring surveyor of a system that is centered around managing dual forces** ('duality-stewardship') as they jointly determine performance, competitiveness, and, more importantly, survival. In fact, the board's traditional monitoring and advisory roles must be explicitly complemented with a **'duality (TPN/DMN) management' mandate**.

Sustainable firm (out)performance, strategic renewal, and firm survival are less a challenge of resolving an antagonism, but one of embracing antagonism as duality, i.e. cultivating the organizational capability to cross-fertilize in real-time TPN (exploitation) and DMN (exploration) domains. Both (1) exploitation/exploration as well as (2) financial/strategic control are two domains, respectively, that essentially represent a TPN/DMN challenge. Free-energy principle's circular causality of top-down/bottom-up prediction error-minimization **resolves the TPN/DMN antagonism in a self-organizing manner:** error-messages guide strategic focus and emphasis.

The DMN-centric board of directors is critical to **duality-stewardship**. It is the TPN/DMN (switch) challenge that further hardens the call for a new governance approach that is less concerned with the contents of strategy but obsessed with the structure, cognition, and capabilities fostering top-down/bottom-up surprise-minimization in pursuit of firm survival.

2.1.7 Conclusion: structure, cognition, and capabilities

Six core theoretical perspectives have been introduced as the foundation for Free-Energy Governance: (1) ***Upper Echelon View*** (UEV); (2) ***Attention-Based View*** (ABV); (3) ***Dynamic Capabilities View*** (DCV); (4) ***Enactivist Approach*** (EA); (5) ***Prediction Processing Framework*** (PPF); and (6) ***Antagonistic Neural Networks Perspective*** (ANNP).

Free-Energy Governance is the opening chapter of a new generative logic of organizing. The coupling of governance and operational channels (**structure**), environmental engagement in form of enactment (**cognition**), and sensing and sensemaking (**capabilities**) form the basis of Free-Energy-Governance.

Real-time coupling of governance and operational channels – formally and informally – ensures that 'dissonant signals' can travel 'frictionless' from the field-level to Upper Echelon and generatively challenge top-down predictions and underlying prediction models. The higher the friction, the higher 'free-energy' (error potential) and the more likely that top-down dominant logics are being reinforced, cultivating the antechamber of a firm's entropy.

Cognition in form of world enactment is the purpose-directed and social construction of 'shared meaning' and 'shared expectations', anchored in the belief that a firm's environment is not objectively given and determined, but that there are at least as many environments as there are economic actors. Sensing and sensemaking are action-centric and goal-directed. World enactment is shared meaning as the foundation of performance-pursuing and survival-enhancing strategic renewal. Environmental enactment is not about 'inventing reality' but a continuous process of attributing 'significance' and assigning probabilities to selected aspects of a given environment in function of purpose and goals. It is that selection/retention process - anchored in prediction-error minimization - which creates a unique interpretation of environment as a basis for firm outperformance and survival.

TPN/DMN duality management is the cognitive microfoundation of dynamic board capabilities. 'Exploitation vs. exploration' and 'financial vs. strategic control' are two essential dualities that shape the initiation and sustainability of strategic renewal pathways. Rather than conceiving the board of directors just as a monitoring, advisory, or boundary-spanning 'super-appendix' to the organization, the board must embrace

DMN-centric duality-management as a critical responsibility complementing TPN-centric top-executive leadership.

In the absence of embracing governance as a TPN/DMN duality management challenge, a board of directors is likely to be reduced to a 'rear-mirror'-trapped, information-processing-centric monitoring body, overly concerned with board-effectiveness and financial control instead of continuous strategic renewal as a basis for firm survival. Consequently, the board of directors is at risk to be relegated to strategic irrelevance.

Free-Energy Governance, as an extension of PPF, empowers "transitions from states of ignorance to states of insight" (Friston et Al., 2017: 2634) as a basis for strategic renewal. FEG is a world-disclosing perspective based on one 'single imperative': the resolution of equivocality through purpose-directed, 'curiosity-driven', and action-centric prediction-error minimization – always in pursuit of surprise-minimization and dedicated to firm outperformance and survival.

2.2 Propositions

The research question is:

***In a discontinuous and distributed world**:*

> *WHAT (a) cross-hierarchical framework coupling governance and operational channels in form of recognition density, (b) firm-level environmental engagement, and (c) dynamic board capabilities are essential for the sustainability of successful continuous strategic renewal and, hence, the firm's prospects for survival?*[201]

On this basis, three propositions are established:

2.2.1 P1- Recognition density (Structure)

The coupling of governance and operational channels (formally and informally) – linking top-down predictions and bottom-up stimuli (*recognition density*) and, hence, empowering bottom-up stimuli/field data talking to strategic decision-(prediction)makers, is the foundation for 'real-time' prediction error or 'free-energy' minimization and organizational learning. The board of directors' effective impact upon strategic renewal - actually, the impact of any organizational member - is critically determined by the coupling of governance and operational channels (in terms of optimal recognition density in form of top-down/bottom-up/lateral 'messaging passing' and 'belief propagation'). ***A firm where executive leadership is emphasizing a top-down approach cultivating a form of CEO-centrism in strategy-ownership, for example, governance and operational channels are unlikely to be coupled*** for the purpose of free-energy minimization. Bottom-up 'message passing' is prone to be suffocated by top-down 'belief propagation'. Consequently, it is just a matter of time for firm survival to be at risk.

The stronger a firm's cross-hierarchical top-down/bottom-up/lateral recognition density between and within governance and operational channels, *the stronger the firm's orientation towards free-energy (surprise) minimization (P1.2), the stronger the*

[201] "**The 'What' question** usually entails a variance theory explanation of the input factors (independent variables) that statistically explain variations in some outcome criteria (dependent variables)." (Van de Ven, 2007: 22; emphasis by DBK)

board's impact on sustainably initiating and guiding continuous strategic renewal (P1.3), the higher the firm's strategic control (P1.4), ***the less significant a firm's top-down approach cultivating a form of CEO-centrism in strategy-ownership (P1.5)****, and* ***the stronger the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival (P1.1)****.*

2.2.2 P2 - Environmental enactment (Cognition)

A firm's cognitive orientation towards environmental enactment rather than adaptation – i.e., embracing the world in form of a purpose-directed and action-centric 'controller of a light torch in the dark' seeking to reveal significance in equivocality - is fundamentally a matter of free-energy-minimization. Revealing (enacting) environmental significance is action-generated and socially constructed. Determining the relevance of environmental signals is a function of the firm's 'clarity' of purpose, predictions, and underlying prediction models. However, the ultimate 'organizational power' is when non-salient but potentially transformative/dissonant signals can be 'given significance' in form of innovative abduction as they travel bottom-up through the organization to be made available to Upper Echelon for sensemaking/error-minimization/double-loop learning. ***A company, for example, that embraces the identity and action-agenda of a 'fast follower' is unlikely to idiosyncratically enact environment and engage in innovative abduction but is in pursuit of adaptation and is consequently more likely to be taken by surprise at the expense of firm survival.***

The stronger a firm's cognitive orientation towards environmental enactment and innovative abduction*, the stronger the firm's orientation towards free-energy (surprise) minimization (P2.2), the stronger the board's impact on sustainably initiating and guiding continuous strategic renewal (P2.3), the higher the firm's strategic control* ***(P2.4), the weaker the firm's inclination to be a strategic 'fast-follower' (P2.5)****, and* ***the stronger the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival (P2.1)****.*

2.2.3 P3 - Dynamic board capabilities (Capabilities)

Dynamic board capabilities are defined as generative sensing and sensemaking in the form of DMN-centric duality management of exploitation vs. exploration and financial vs. strategic control. While those capabilities are not strictly limited to the board and while they are equally critical capabilities at the Upper Echelon and middle-management levels, the board of directors, due to its cognitive distance to TPN-centric exploitation-logics, is best positioned to assume this 'duality stewardship' role. The objective is for exploitation and exploration to be simultaneously activated at all hierarchical layers, though at varying degrees of emphasis at different points in time of a firm's lifecycle. Further, the board is best positioned to ensure that a firm maintains a sustainable balance between financial (external innovation/growth) and strategic control (in-house innovation creating new markets). An overemphasis on external innovation (by way of M&A and joint-ventures) is likely to compromise the firm's flexibility (in particular joint-venture governance arrangement can restrict agility), independence and eventually survival. Therefore, DMN-centric duality management is essential for continuous strategic renewal. ***When digital transformation, for example, is exclusively and continuously the product of financial control (M&A and joint-venturing), then fundamentally there is a risk that 'wholesale transformation' in the non-digital core business remains non-existent while strategic control (in-house radical innovation) is hard to (re)build. Consequently, the firm's survival is at risk.***

The stronger the board's DMN-centric duality management of exploitation vs. exploration and financial vs. strategic control, *the stronger the firm's orientation towards free-energy (surprise) minimization (P3.2), the stronger the board's impact on sustainably initiating and guiding continuous strategic renewal (P3.3), the higher the firm's strategic control* ***(P3.4), the stronger the potential for 'wholesale renewal' (P3.5)****, and* ***the stronger the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival (P3.1)****.*

2.3 Conclusion: strategic renewal needs a new governance model

Free Energy Governance (FEG) defines a new logic of organizing, which is essential to succeeding in a discontinuous and distributed world. FEG is a deep-learning equivalent logic of organizing. The (cognitive) coupling (in terms of recognition density) of governance and operational channels lays the foundation for empowering continuous strategic renewal.

The board's strategic role is redefined in form of dynamic board capabilities. Essentially, the board's sensing and sensemaking capability must ensure that executive leadership's dominant and exploitation-centric logics, as expressed in predictions and underlying prediction models, remain challenged in real-time by bottom-up data and market stimuli. More importantly, environment is enacted.

In summary, the board must assume the role of sponsor (or enforcer) of three categorical imperatives defining the success and sustainability of strategic renewal and firm survival:

(1) **Foster recognition density between and within all hierarchical layers**: process follows structure, and strategy follows process. (STRUCTURE)

(2) **Embrace environment as action-generated and socially constructed 'shared meaning'**: environment must be enacted as a matter of purpose-directed revealing of significance rather than taken as an exogenously given object awaiting top-down directed adaptation. (COGNITION)

(3) **De-chain the firm from thinking in terms of antagonisms but embrace real-time duality:** exploration vs. exploitation as well as financial vs. strategic control do not co-exist but form a mutually reinforcing real-time duality. (CAPABILITES)

Neither strategy process nor corporate governance research have satisfactorily provided a framework to match the very demands of continuous strategic renewal in an increasingly distributed and discontinuous world: *transforming the firm's core capabilities*, *impacting the entire organization across all organizational layers*, and *breaking path-dependency*.

Any organizational governance framework that is meant to be of relevance in terms of firm-survival must not only redefine **the nexus of structure, cognition, and capabilities** but must leverage the board of directors as a competitive advantage measured in function of firm performance and survival rather than just board effectiveness.

'Wholesale digital reinvention' (Siebel, 2019: 22), i.e. strategic renewal, requires a 'wholesale governance reinvention'. Free Energy Governance lays the foundation for that reinvention.

The 'General Theoretical Part' is concluded with putting Free-Energy Governance (FEG) into comparative perspective with Traditional Corporate Governance (TCG) models[202] through the lens of the theoretical concepts developed in this dissertation (see Table 2). Indeed, amongst traditional corporate governance models, there is a range of types of boards, varying in degree from strategic ('stewardship') to control ('agency') orientation, from 'shareholder-value' to 'stakeholder' centrism, and from unitary to dual-structures (e.g., Germany).[203]

It is appropriate to rather generally contrast FEG with TCG since FEG introduces a radically new logic. FEG represents a logical match to the 'corporate wholesale reinvention' that success in strategic renewal is now imposing: "more caterpillar-to-butterfly process, moving gracefully from one way of working to an entirely new one, replacing corporate body parts and ways of functioning completely in some cases to capture far more value than was possible using low-scale, low-leverage legacy business". (Siebel, 2019: 16; quoting D. Hinchcliffe on distinguishing 'digitization' from 'digital transformation')

[202] "We apply agency and stewardship theories to detail contrasting, yet potentially complementary, approaches to governance. Rooted in economics and finance, **agency theory** informs a control approach aimed at curbing self-serving behaviors of managers (agents) that may negatively impact owners' (principals) wealth (Eisenhardt, 1989). **Stewardship theory** details a collaborative approach, tapping insights from sociology and psychology. Proponents of this approach strive to enhance board-management ties and decision making by empowering managers (stewards) of the firm (Davis, Schoorman, & Donaldson, 1997)." (Sundaramurthy and Lewis, 2003: 398; emphasis by DBK).

[203] Hilb's (2012) practice-oriented '**New Corporate Governance**' provides a comprehensive overview and interpretation of prevailing governance regimes. Hilb essentially distinguishes four types of boards: administrative; entrepreneurial; directing/controlling; and supervisory. (Hilb, 2012: vii). However, independently of the board type or model of corporate governance system (shareholder value maximization-oriented Anglo-American model' vs. the 'stakeholder-based model' embracing a broader set of values and identities), all existing corporate governance approaches suffer from sever shortcomings, as outlined in this dissertation's Problem Analysis (1.1).

Table 2: FEG vs. TCG Models

Concept	Free-Energy Governance (FEG)	Traditional Corporate Governance (TCG)
Structure (hierarchy)	**top-down/bottom-up** (circular causality)	**top-down**
Recognition density	**cross-hierarchical** (circular top-down 'belief propagation' and bottom-up 'message-passing')	**Upper Echelon-centric** (unidirectional top-down 'belief propagation')
Process	**generative** (continuous)	**static** (agenda-focused)
Capabilities	**meta/dynamic** (cognitive)	**operational** (domain-centric)
Neural network	**DMN**-centric	**TPN**-centric
Learning	**double-loop**	**single-loop**
Performance metric	**minimizing prediction-error/surprise** (strategic renewal/firm survival)	**board effectiveness/ board capital** (compliance and firm performance)
Performance variables	**structure** (recognition density), **cognition** (environmental enactment), and **capabilities** (duality management)	**demographics** (domain expertise, boundary-spanning, and other)
Control	**strategic/financial** (duality)	**financial**
Environment	**co-creation** (enactment)	**co-alignment** (adaptation)
Digital transformation	**wholesale** re-invention (holistic and programmatic)	**selective** (opportunistic)
Strategic renewal	**autonomous** (proactive; bottom-up stimuli/message-passing inspired)	**induced** (reactive; top-down belief propagation)
Machine learning logic	**free-energy minimization** (minimizing surprise)	**Supervised/reinforcement learning** (avoiding uncertainty, maximizing a reward)
Purpose	**continuous strategic renewal/ firm-survival** (1) optimizing 'recognition density; (2) purpose-directed environmental enactment and (3) dynamic duality-management of exploration and exploitation as well as financial and strategic control	**regulatory compliance/ firm performance** monitoring, advising, challenging, boundary-spanning (networking) guided by CEO-centric/'Upper Echelon'-dominated frames

Indeed, any such juxtaposition of two governance *philosophies* can hardly escape the accusation of over-simplification. But once we embrace the world as discontinuous and distributed - mandating continuous strategic renewal, and once we embrace strategy process as top-down prediction models generating predictions to be challenged by bottom-up data and stimuli (prediction-error/surprise minimization), we start understanding that today's predominant corporate governance approaches are not only a "low-scale, low-leverage legacy business" but are still trapped in the anti-clocked logic that environment is an object to adapt to (usually on the back of more CEO-framed information-flow and analysis) and, consequently, breeding a logic and emphasis of financial control at the expense of strategic control, eventually putting firm performance and survival at risk.

As we conclude the General Theoretical Part and introduce the empirical study, the following three independent variables form the core of the analysis: (a) **structure**: coupling governance and operational channels in form of 'recognition density', i.e. top-down/bottom-up prediction-error-minimization; (b) **cognition**: environmental enactment; (c) (dynamic board) **capabilities**: duality management of exploitation/ exploration and financial/strategic control. Further, the following two control variables have been considered: (d) **environmental scarcity** and (e) **family ownership**. Table 7 matches the variables to the theorems presented in the General Theoretical Part.

Siggelknow's 'rule of thumb' should close the 'General Theoretical Part':
"the grander the theoretical claims, the more free-standing the theory has to be. In other words, even if a reader were only to read the conceptual part of the paper, he or she would be convinced of the internal logic of the conceptual argument." (2007: 21; emphasis by DBK)

Indeed, the internal logic of the Free-Energy Governance framework should be free-standing as both a new logic of organizing as well as an early-warning system predicting *firm-survival-at-risk*. Future research, beyond this study, will determine FEG's relevance.

3 Particular Empirical Part

“Scholarship means something more than research, and engagement is the means for scholarship to flourish.” (Van de Ven, 2007: 9)

*“If you want to write a case study that derives its excitement and justification through little more than the description of a particular phenomenon, **make sure you have a talking pig**. If not, a purely descriptive study will be a hard sell.” (Siggelknow, 2007: 20; emphasis by DBK)*

3.1 Objective of the qualitative empirical case study

*This dissertation is dedicated to firm survival in an increasingly discontinuous and distributed world with the unit of analysis being the sustainability of continuous strategic renewal determined by the triplet of a firm’s (1) **structure** (coupling governance and operational channels in form of ‘recognition density’, i.e. top-down/bottom-up prediction-error-minimization), (2) **cognition** (environmental enactment), and (3) **dynamic board capabilities** (duality management of exploitation/ exploration and financial/strategic control).*

The digital transformation of Ringier AG (‘Ringier’)[204], one of Europe’s oldest and leading media companies, provides the context for applying a Free-Energy-Governance (FEG) lens, linking firm-level structure, cognition, and capabilities as a basis to assess ***the sustainability of successful and continuous strategic renewal and, hence, the firm’s prospects for survival***.

[204] “Two things: digital journalism and digital marketplaces. I think that’s probably the essence of Ringier’s digital transformation process.” (Walder, 2019a: Annex IV)

Under the CEO-leadership of Marc Walder[205], Ringier has become a celebrated case of success in digital transformation, both in Switzerland as well as within the European media industry. This status of rather undisputed transformative achievement, at the time of this study, makes Ringier a strong candidate for applying the FEG framework.

Founded in 1833 in Switzerland, the company gradually evolved from printing to publishing to digital marketplaces with approximately seven thousand employees in nineteen countries today. Since its foundation, the company is controlled by the Ringier family, represented by its current Chairman Michael Ringier (*family control*). Facing the reality of entropic erosion[206] in the traditional publishing business (*environmental scarcity*), the company started initiating strategic renewal in form of digital transformation. This study defines the starting point of this renewal process with the appointment of Marc Walder as CEO of Ringier Switzerland in 2008. ('Annex I' summarizes Ringier's historic development.)

The growth of the EBITDA-contribution originating from the digital business grew from zero (2008-2012) to seventy-one percent (2018), principally on the back of roughly CHF1.8bn investment in mostly digital-related M&A and joint ventures as well as divestments of traditional assets amounting to roughly CHF900m, starting in 2008[207].

The study's objective is to empirically develop the answer to the research question:

In a discontinuous and distributed world*: WHAT (a) cross-hierarchical framework coupling governance and operational channels in form of recognition density, (b) firm-level environmental engagement, and (c) dynamic board capabilities are essential for*

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[205] Marc Walder was appointed CEO of Ringier Switzerland in 2008 and then Group-CEO in 2012. In January 2018, Marc Walder became a 10-percent shareholder in the holding company (as the first and only non-family member in the company's history). A remarkable career, considering that in 1993, Marc Walder, after an ATP-level tennis career, started working at Ringier "as a 'Volontär' [equivalent to internship-level] for a monthly salary of CHF700." (see Lüchinger, 2019: 53)

[206] See Schmitt et al. (2016: 364). There has been significant deterioration in terms of both shape and size in the traditional media industry since the digital technologies and social media disrupted the industry. In some areas, such as Classified (upon which many traditional publishers had heavily relied) the impact was rather sudden (contraction), whereas in other areas (tabloid and magazine publishing) the decline was of a more gradual nature (erosion). Ringier, for example, was never too reliant upon Classified as a source of revenues. Therefore, for the purposes of this study we define Ringier's environmental scarcity as *entropic erosion*.

[207] "Für diese schöne neue Ringier-Welt, wird die Finanzchefin des Hauses später einmal konstatieren, hat CEO Marc Walder seit dem Jahr 2007 1,8 Milliarden Franken aus der Schatulle der Familie Ringier in das neue Digitale investiert. Und dabei auch Altes, nicht mehr Benötigtes, nicht mehr Brauchbares abgeschnitten – in der Währung der Finanzchefin summieren sich diese Desinvestitionen auf 900 Millionen Franken." (Lüchinger, 2019: 211-212)

the sustainability of successful continuous strategic renewal and, hence, the firm's prospects for survival?

The empirical study's ultimate objective is to support FEG's relevance not only as a new generative governance framework supporting continuous strategic renewal but as an early-warning system indicating when 'corporate entropy' is on the rise before it leads to a loss of control. Indeed, digital transformation's surface of success (retrospectively measured in terms of financial KPIs) might be trailing a breeding friability challenging the firm's future survival. The research propositions design the entropy-warning-system: structure, cognition, and capabilities.

3.2 Research design

The research is designed around three core dimensions: (1) critical events profiling the digital transformation of Ringier (2008-2015), (2) 'sensemaking interviews' with selected members of Ringier's 'Upper Echelon', and (3) a categories/coding-centric qualitative content analysis inspired by sensemaking-methodology.

Firstly, selected key events that define the very foundation of the digital transformation (2008-2015) are put into perspective (see Table 3). Strategic renewal must be approached as a continuous and generative phenomenon, consisting of many events over a period of time, rather than one single event. Ex-post sensemaking of strategic renewal in form of a single case study consolidating multiple events from multiple stakeholder perspectives should provide a high degree of rigor. While the question arises whether these key events as a whole make sense or are but opportunistic hikes, this dissertation disregards the 'strategy content' dimension (as explicated in 1.6 Boundaries: 52).[208]

Since 2015, there have been many important events and initiatives that continue shaping Ringier's digital transformation. However, for the purposes of this study, events after 2015 are considered to be marginally of lesser transformative impact than the selected events (2008-2015). The Engaged Scholarship interview with CEO-Walder (Annex VIII) confirms that "the period between 2008-2015 was rather wild, fast, courageous and opportunistic…[and] around 2016, the 'bottom-up' dimension started to complement our top-down leadership approach".

Considering all interviews, the period since 2015 appears to stand out in terms of: (1) incremental initiatives in the digital business and overall operational consolidation of past M&A-driven growth, (2) continued struggle in the core publishing business, and (3) search for the next 'big thing' to compensate for an accelerating decline in profits in the traditional publishing business and insufficient profit growth in digital marketplaces. In this context, see also Annex VIII: Engaged Scholarship.

[208] Collins' 'new-activities-test' is worth recalling in this context: "1. Do they ignite passion and fit with the company's core values? 2. Can the organization be the best in the world at these activities or in these areas? 3. Will these activities help drive the organization's economic or resource engine?" (Collins, 2009: 63)

Table 3: Key Events: Ringier's strategic renewal (2008-2015)

Year	Strategic Event	Comment
2008	**Scout24** (acquisition of Switzerland's leading marketplace for cars and residential real estate)	Creation of transformative business pillar 'marketplaces', in addition to the existing pillars of 'printing' and 'publishing'
2010	**Ticketcorner** (acquisition of Switzerland's event-ticketing market leader through a joint-venture with Germany's CTS Eventim)	Entertainment reinforced as a potential business pillar (on the back of already existing radio portfolio and talent agencies) – 'top-down diversification strategy'
2010	**RAS (Ringier Axel Springer Media AG)** (joint-venture pools majority of respective assets in Eastern/Central Europe, ex Russia)	Pooling of resources of two of Europe's leading media companies considered essential to compete with clear strategic commitment to grow digital business and to IPO within 3-5 years
2012	**Onet.pl** (RAS acquires one of Europe's biggest digital news-aggregators; many add-on acquisitions, however, had to follow in order to maintain and further extend its leadership position	Together with Scout24, most transformative digital transaction (imposing divestments and evolving Ringier's governance structure, i.e. new board committees); new tech competencies dedicated to content monetization start positioning Ringier as technology driven
2012	**jobs.ch** (Switzerland's leading jobs platform; Ringier and Swiss competitor TX Group join forces in 50-50 acquisition)	Transaction reinforces Ringier's dominant position in digital marketplaces in Switzerland but equally caps 'marketplaces' potential expansion in Switzerland
2014	**KKR** (acquires 49% stake in Scout24 Schweiz AG)	Private equity enters a family-controlled company at the subsidiary level: a rather short-lived but highly profitable partnership; the significance of knowledge transfer and culture-change in terms of 'operational engineering' cannot be overestimated
2015	**Admeira** (newly formed entity jointly spearheaded by Ringier, Swisscom and SRG [Swiss TV] to create a centralized and cross-media advertisement distribution platform)	Marc Walder played an essential role in positioning Admeira as a top-down response to Google and Facebook in the Swiss advertisement market; publishers were invited to effectively outsource ads to a - rather controversially 'controlled' - platform; in the absence of other media companies' buy-in, this initiative was impossible to realize[209]

[209] "Weniger zufrieden dürfte Marc Walder mit einem anderen Baby sein: *Admeira*. Innerhalb der Firma wachsen die Kulturen der Beteiligten erst langsam zusammen. Und außerhalb sind die politischen Fallstricke noch immer gespannt. Immerhin: Seit der TV-Vermarkter *Goldbach* der größten *Admeira*-Kritikerin *Tamedia* gehört und die *SRG* ihre Anteile an *Admeira* veräußert hat, herrscht in dieser Angelegenheit medienpolitisches Tauwetter." (Lüchinger, 2019: 230)

Table 3 has been double-checked with Ringier and approved in writing by CFO-Bassler (February 3, 2020).

Secondly, semi-structured (open-style and intensive) interviews based on a generally pre-defined interview guide (Annex III) were conducted with key members of Ringier's Upper Echelon (Table 4): the executive leadership team (CEO; CFO) and the Board of Directors (Chairman-owner and two independent non-executive directors; altogether 3 out of then six board members).[210]

Table 4: The Sensemakers: 2008-2015

Name	Position	Tenure
Michael **RINGIER**	CEO **Chairman**	1985-1991 1997-2003 1991-1997 **2003-to date**
Claudio **CISULLO**	**Board Director** Board Director, *Ringier Axel Springer Schweiz; Admeira*	**2013-to date** 2016-to date
Christiane **ZU SALM**	**Board Director**	**2007-2019**
Marc **WALDER**	**CEO (CH)** **Group-CEO** Minority Owner	**2008-2012** **2012-to date** 2018-to date
Annabella **BASSLER**	Diverse roles in finance **Group-CFO**	2007-2012 **2012-to date**

Table 5: The Sensemakers: 2008-2015 (not interviewed)

Name	Position	Tenure
Uli **SIGG**	Chairman **Deputy Chairman**	1999-2003 **2003-to date**
Robin **LINGG**	Board Director Head of Marketplaces	2011-2013 **2014-to date**

[210] **DISCLOSURE**: Given DBK's professional proximity to Marc Walder, Michael Gasser (see Gasser, 2020) conducted certain interviews to ensure that the flow of the 'sensemaking' dialogue is not compromised by any personal proximity. Marc Walder and DBK's directorship at Sportradar AG, a leading sports data and analytics company, overlapped between 2015-2018. In 2017, Marc Walder joined the board of directors (Verwaltungsrat) of Marquard Media Group AG, of which DBK is Group CEO, delegate and member of the board of directors, as well as a 20% shareholder.

At a later stage, we will assess the boundaries of the restricted universe of 'sensemakers' who were made available for this study. However, the relevance and valuable contribution of the timely and Ringier-commissioned anniversary publication titled 'Ringen um Ringier' ['The Struggle for Ringier'] by René Lüchinger (2019) cannot be stressed enough.[211]

Thirdly, Mayring's (2015) qualitative content analysis lays the foundation for the research method. Sensemaking methodology (Dervin, 2003) inspired the design, conduct, and interpretation of the interviews. The objective has been to go beyond the surface of the dialogue, construct the linkage between theory and empirical study through content categorization defined by a coding scheme, but not to lose perspective of 'the centrality of the portrait of the human subject', the sensemaker.

"Sense-Making thrusts itself between chaos and order, structure and person, facts and illusions, external worlds and inner, universals and particulars […] ***Sense-Making assumes that the quest of human beings to fix the real faces a never-ending riddle****."* (Dervin, 2003: 140; emphasis by DBK)[212]

3.3 Boundaries of the study

This dissertation is dedicated to the firm-level, disregards team-level dynamics, adopts a processual design perspective, and links the triplet of organizational structure, cognition, and capabilities to the prospects of firm survival. The specific contents of the strategy are of no concern (see 'Boundaries 1.6') The data selection criteria are determined accordingly.

[211] Lüchinger was given access to all board protocols and extensively interviewed all critical actors ('sensemakers') going back to the early stages of transformation initiated by Thomas Trüb (the force behind the first transformative transactions; see 'Annex I – Ringier in historical perspective') as well as those that sold their businesses to Ringier. Overall, Lüchinger draws a rather conclusive analysis – convincingly captured in its title 'The Struggle for Ringier' and based on access to information that rarely any study of corporate governance could reasonably ask for (see Annex V): **the company's survival is challenged**.

[212] "**Theory constructs its evidence, and values and faith construct what constitutes theory.** Furthermore, scientific discovery itself is a social construction, as the study of pulsars by Garfinkel, Lynch, and Livingston (1981) demonstrates. This point, coupled with our previous one, directs attention to testability as a problematic rather than an external given or 'thing'". (Maines, D.R. and Molseed, M.J. 1986. **The obsessive discoverer's complex and the 'discovery' of growth in sociological theory**. American Journal of Sociology, 92: 158-163; p. 162; emphasis by DBK:)

The Free-Energy-Governance framework is about top-down (Upper Echelon) predictions to be challenged by bottom-up (middle-/field-management) data and stimuli. It is a generative and interactive process anchored in circular causality. More importantly, this study does not only define Upper Echelon as explicitly including the board of directors but assigns to the board of directors the critical role of ensuring that **structure**, **cognition**, and **capabilities** are designed and cultivated such as for Free-Energy-Governance to power continuous strategic renewal.

On this basis, a severe boundary of the study is its universe of interviewees:

1. relevant members of the board such as Uli Sigg (from a historical perspective) and Lukas Gähwiler (from today's financial risk management perspective) as well as of the executive leadership such as Robin Lingg (from a strategy formation perspective) were not interviewed; and
2. members of middle- and field-management were left out altogether.

Indeed, this study's conclusions should not only be challenged by a broader representation of Ringier's Upper Echelon but, even more importantly, Ringier's 'bottom-up' *voices from the field*.

Consequently, the design of the study and its corresponding universe of interviewees did not allow to study the firm's ability to manage exploitation and exploration as a real-time duality. In the absence of access to middle- and field-management, it is impossible to assess how exploration interacts with exploitation. The firm's extensive M&A activity during the period under consideration (2008-15), however, suggests that exploration has been rather 'outsourced', and internal innovation has been rather of an incremental nature.

Therefore, in terms of capabilities, the study will focus only on the board's duality management capability of financial and strategic control.

3.4 Scientific method

The qualitative content analysis (Mayring, 2015) lays the foundation for the scientific method. Dervin's (2003) sensemaking methodology[213] provides an additional layer of depth and rigor.

3.4.1 Qualitative content analysis and sensemaking methodology

Complementing the qualitative content analysis with sensemaking methodology is about looking through the "situational logic to how people construct sense" by way of 'situation-defining communication strategies and tactics', "**designed for transmission rather than dialogue**", and where the "human condition is seen either as internally driven by individual human agency or determined by external forces beyond the individual's control", therefore recognizing "**the utter impossibility of separating the inner and outer worlds of human existence**". (Foreman-Wernet, 2003: 6-7; emphasis by DBK) Indeed, there "is nothing natural about information, Dervin says; it has always been designed." (Foreman-Wernet, 2003: 15)

For the purposes of the qualitative content analysis, the very core concepts (see Table 2: FEG vs. Traditional Corporate Governance Models) have been clustered into three meta-categories: ***structure***, ***cognition***, and ***capabilities*** (Table 6).

Table 6: Content categories – structure, cognition, and capabilities

Structure/ Recognition Density	**Cognition**	**Capabilities**
coupling of governance and operational channels	**environmental engagement** (enactment vs. adaptation)	**sensing and sensemaking (duality management)**
Prediction-Error/ Surprise Minimization		

[213] Dervin (2003; 136-37; emphasis by DBK) provides insightful definitions for metatheory, methodology, method, and substantive theory: "**Metatheory**: Presuppositions which provide general perspectives or ways of looking based on assumptions about the nature of reality and human beings (ontology), the nature of knowing (epistemology), the purposes of theory and research (teleology), values and ethics (axiology), and the nature of power (ideology). **Methodology**: Reflexive analysis and development of the 'hows' of theorizing, observing, analyzing, interpreting. **Method**: The specific 'hows' – techniques, guided implicitly or explicitly by methodological considerations. **Substantive theory**: Inductively and/or deductively derived concepts (which define phenomena) and propositions (which suggest how and under what conditions concepts are thought to be connected); sometimes called unit theory. "

On this basis, the linkage between theory and *independent variables* as well as *control variables* (together the **content categories**) has been established (Table 7) and then applied to the study's data (Table 8).

Table 7: Content categories and Free-Energy Governance

Content Category	Theory
Structure/ Recognition Density **(top-down/bottom-up prediction-error/surprise minimization)**	➢ FEG [Free-Energy Governance], in analogy to neuroscience's free-energy principle, is "a unified account of action, perception and learning" (Friston, 2010: 127) embracing strategic governance as a circularly integrated top-down/bottom-up learning system dedicated to action-generated predictions, prediction-error minimization, and the development of prediction models in the form of double-loop learning. ➢ surprise, most often in the form of rather soft signals, occurs first of all at the bottom/stimuli-level of the firm in resource markets close to clients, products, and new technologies, long before top-leadership has 'any sense' of a challenge to existing predictions and prediction models. Every story of strategic and transformative renewal is too often and retrospectively a story of leadership admitting having missed relevant signals early enough. Therefore, the most pressing issue is how organizations and strategy process are best designed to enable a 'friction-less' and real-time causal circularity between bottom-up stimuli and top-down predictions ➢ the Upper Echelon governance layer is redefined as a predication machine (generating top-down predictions on the back of prediction models) while the operations layer is a source of bottom-up stimuli and data points challenging top-down prediction and its underlying prediction models to minimize error and optimize prediction-accuracy over time ➢ 'optimization' is central to PPF's free-energy principle. "This optimization makes every level in the hierarchy accountable to the others." (Friston, 2010: 129) Sensing/sensemaking is determined by 'recognition density', i.e. 'message passing' and 'belief propagation' (Friston, 2010: 130) within/across layers/business units. ➢ strategy is an inherently social property (Bouquet and Birkinshaw, 2011: 244): enactive, iterative, and generative (Dong et al, 2016). The coupling of governance and operational channels (Ocasio and Joseph, 2005) - top-down (goal– and schema-driven) and bottom-up (stimuli/data-driven) - is essential to leveraging structurally distributed attention as competitive advantage. The linkage of cognition and structure is ABV's most relevant contributions. ➢ the effectiveness of bottom-up/top-down integration is dependent on lateral integration at each hierarchical layer. In other words, the inter-hierarchical connectivity is dependent on intra-hierarchical/lateral 'interrelating' for 'shared meaning'. ➢ "successful changes in the organizational domain are preceded by bottom-up learning and internal selection. Unless preceded by learning, domain shifts increase the organization's vulnerability to external selection and expose to significant survival risk." (Floyd and Lane, 2000: 155); ➢ "no matter what the firm wants to achieve, optimal value creation will always crucially depend on eliciting a motivation among employees that is directed at

	common goals, such that organizational members are motivated to choose their actions in terms of joint goals and exert intelligent effort to reach joint goals". (Foss and Lindenberg: 2013: 96) ➢ "the tension between induced and autonomous strategic renewal reflects the fundamental question of who initiates and drives strategic renewal initiatives." (Schmitt et al., 2018: 89) "The induced perspective builds on upper echelon (Hambrick and Mason, 1984) and its central premise that executives' experiences, values and personalities influence their interpretations of the situations they face and, in turn, affect their choices (Hambrick, 2007)." (Schmitt et al., 2018: 89) "Past strategic renewal research shows that top-down driven renewal initiatives can create institutionalized contexts that determine acceptable and inacceptable behaviors and processes, effectively creating barriers to bottom-up strategic renewal initiatives (Verbeke et al. 2007). Senior managers, therefore, risk reinforcing their own, centralized renewal orientation (Lindell 1986), while stifling lower-level managers and employees' creative abilities in the process" (Schmitt et al., 2016: 90) ➢ the more top-down centric and exclusive the 'community of interactions', the more likely that the strategic renewal process is outward-oriented, i.e. turning to M&A, minority investments, and venture-partnering to provide access to new knowledge and markets. In the absence of circular top-down/bottom-up organizational learning, the firm may become more and more trapped in top leadership's 'dominant logics' and highly dependent on M&A/joint-venture-driven innovation and growth since the connection to the firm's operational base is too weak.
Cognition **(environmental enactment)**	➢ while Weick's enactment-based interpretative approach to environment and organization (Weick, 1995) is extensively quoted in strategic management literature, the dominant views concerning the relationship between organization and environment, remain largely rooted in the assumption that there is an exogenous objective reality out there. According to 'strategic choice' theory (Child, 1972) firms choose their environmental domains and according to 'environmental determinism' (Aldrich, 2008) the organizational population evolves as a function of environment-controlled selection and retention processes. ➢ organization members actively form (enact) their environments through their social interaction. A pattern of enactment establishes the foundation of organizational reality, and in turn has effects in shaping future enactments. The task of strategic management in this view is organization making — to create and maintain systems of shared meaning that facilitate organized action." (Smircich and Stubbart, 1985: 724) The environment "is located in the mind of the actor and is imposed by him on experience in order to make that experience more meaningful. It seldom dawns on organizational theorists to look for environments inside of heads rather than outside of them." (Weick, 1977: 274) ➢ "the problem is that there are too many meanings, not too few. The problem faced by the sensemaker is one of equivocality, not one of uncertainty. The problem is confusion, not ignorance." (Weick, 1995: 27). There are as many environmental 'realities', at any point in time, as there are organizations. But the critical consideration is how an organization trans-morphs the sensemaking activity of the individual into organizational enactment and, eventually, strategic renewal to ensure firm performance and survival. Enactment is essentially an (interactive and generative) social learning (sensemaking) process. (Crossan et al., 2003)

	➢ "business environments are [not] objective environments, awaiting discovery through the application of formal analytical techniques". (Hodgkinson, 2015:15) ➢ a firm's sensing capability, therefore, is determined by the social, action-centric, and goal-oriented construction of prediction models. These 'sensing models' are constantly adjusted through 'error' and 'deviation' feedback loops. ➢ the design of so-called 'noticing systems' (Starbuck and Milliken, 1988) or 'interpretation systems' (Weick and Daft, 1983) lays the foundation for a firm's capacity for strategic renewal. Hierarchical structures, leadership's cognitive capabilities for intuiting (sensing) and interpreting (sensemaking), and, more importantly, the firm's social processes for integrating and institutionalizing goal-directed interpretations of the 'way of the world' constitute a firm's 'system of shared meaning'. It is this system (shaped by organizational structure and processes, and dynamic capabilities) that shapes a firm's enactment capability and eventually determines the firm's orientation for strategic renewal as well as its performance.
Capabilities **(sensing and sensemaking)**	➢ sensing and sensemaking are established as universal dynamic board capabilities and operationalized in form of: (1) goal-directed environmental enactment (as opposed to the pursuit of adaptation to an objectively defined environment – which is non-existent); and (2) duality management in the form of real-time dynamic and continuous balancing of (2.1) exploitation vs. exploration and 2.2) financial vs. strategic control. ➢ ANNP provides the neuroscientific basis for duality management: the antagonistic relationship is between two large-scale cortical networks - the task-positive network (TPN) and the default mode network (DMN) – which, simply put, are neuroanatomical representations of top-management's day-to-day task-specific focus on exploitation (TPN) on the one side and the rather non-routine divergent and creative thinking that fuels exploration and strategic renewal (DMN). ➢ FEG's cross- and intra-hierarchical focus (top-down/bottom-up/lateral) logically concludes that managing the TPN/DMN antagonism is not a top-down challenge calling for structural compartmentalization but "is to simultaneously pursue exploration and exploitation at all levels of the organization". (Boumgarden, 2012: 591) ➢ since the human brain's TPN and DMN spheres are antagonistically related, the only way to embrace paradox as duality is by integrating in circular causality top-down predictions and bottom-up stimuli. Effectively, the challenge is one of switching fast and in-real time between the emphasis of respective dual dimensions such as (1) exploitation vs. exploration; and (2) financial vs. strategic control. Indeed, this 'real-time switching process' cannot be relegated to a single person (e.g., CEO or Executive Chairman) or Upper Echelon as a team but must be the result of a deep-learning inspired system that relates top-down predictions and bottom-up data input. Consequently, the board's unique DMN contribution cannot be ignored but must be integrated into this process. ➢ "increasing managers' top-down knowledge inflows within an organization, without enabling bottom-up or horizontal inflows, is likely to increase managers' exploitation activities without increasing their exploration activities. This would lead to exploitation driving out exploration. Furthermore, stimulating managers' bottom-up and/or horizontal knowledge inflows within an organization, without stimulating top-down knowledge flows, is likely to increase exploration activities of managers without increasing their exploitation

	activities. This would lead to exploration driving out exploitation." (Mom et al., 2007: 925) ➢ a firm's generative sensing and sensemaking capabilities are initiated by individual members' attentional engagement and intuition but, more importantly, are socially constructed (by the entire organization) as shared-meaning: laterally (amongst board members) and top-down (board and executive leadership) predictions and bottom-up (field and middle-management) stimuli. ➢ firms "engaging in acquisitions and divestitures emphasize financial controls, deemphasize strategic controls, and thereby produce less internal innovation. Furthermore, these firms are likely to seek external innovation to gain short-term benefits in competitive advantage. We conclude that engaging in the market for corporate control strongly affects the context in which innovation is framed, the control mechanisms employed, and the design and process of innovation." (Hitt et al., 1996: 1084) ➢ as financial control is emphasized and bottom-up stimuli are deliberately de-emphasized during this initial phase of strategic renewal [responding to environmental scarcity], the danger is that the connectivity between top-down predictions and bottom-up stimuli breaks down altogether over time. Upper Echelon will tend to surrender strategic control and stay in the 'comfort zone' of financial control. Ensuring a sustainable balance between strategic and financial control and avoid the trap of 'financial control' is a mandate that the CEO-led executive leadership cannot be entrusted with. It is at this critical juncture that the board must exercise a meta-role supported by meta-capabilities. Indeed, balancing financial vs. strategic control is a critical board responsibility and is here established as a dynamic board capability. ➢ in summary, structure, cognition, and capabilities are inseparably linked. However, sustainable firm (out)performance, strategic renewal, and survival are less a function of the formality of structure but the power of cognition to informally couple governance and operational channels (Ocasio et al, 2005) and to embrace paradox as duality by cultivating the organizational ability to switch in real-time between TPN and DMN. Both (1) exploitation/exploration as well as (2) financial/strategic control are two domains that are in essence a TPN/DMN (switch) challenge. Executive leadership alone cannot fulfill this ambition. The DMN-centric board of directors is critical to duality-centric stewardship.
Ownership Structure **(family control)**	➢ "certain types of family businesses are especially apt to develop distinctive core competencies. First, they embrace a number of governance and leadership conditions that invite long-term investments and increase the resources available to invest (Carney, 2005; Habbershon & Williams, 1999; Sirmon & Hitt, 2003; Williamson, 1999). Second, their investments are especially likely to take the form of (1) generously funding a substantive mission and its central competencies, (2) fostering the talent to create those competencies, and (3) building close relationships with outside stakeholders that access resources and allow a firm to focus on what it does best. Such investments create competitive asymmetries in that they are difficult to emulate for firms with different governance structures given the different incentives and conditions associated with those structures (Miller, 2003)." (Le Breton-Miller and Miller, 2006: 732)
Environmental Scarcity	➢ "we argue that managerial perception is most critical for renewal situations of gradual environmental decline (i.e., environmental dissolution and environmental erosion). These situations are characterized by weak and

(industrial erosion)	ambiguous environmental signals (Cameron and Zammuto, 1983), which senior executives tend to filter out in order to reduce information complexity (Eisenhardt and Martin, 2000). Strategic renewal is thus strongly dependent on whether or not senior executives perceive the need for taking action (Huff et al., 1992).” (Schmitt et al., 2016: 364) “Conversely, situations of sudden environmental decline (i.e., environmental contraction and environmental collapse) send strong and clear signals that do not create challenges for managerial perception (Zammuto and Cameron, 1985). In these situations, managerial interpretation is more important, since it determines how senior executives assess the challenges arising from environmental decline, evaluate alternative strategic opportunities, and translate their interpretations into strategic choices (Hambrick and Mason, 1984).” (Schmitt et al., 2016: 364) ➢ environmental scarcity is a critical moderator of duality management. Under certain circumstances of environmental scarcity, such as industrial collapse (e.g. the 2008 financial crisis) a firm may have lost altogether its strategic control and is left with no other choice but to look for new business growth by way of M&A (financial control). Indeed, the stronger and more sudden the impact of environmental scarcity, the higher the propensity for strategic renewal to be ‘financial control’ centric. ➢ the traditional publishing business may fall into any of the four categories of environmental scarcity. There has been significant deterioration in terms of both shape and size. In some areas, such as Classified (upon which many traditional publishers had heavily relied) the impact was rather sudden (contraction), whereas in other areas (tabloid and magazine publishing) the decline was of a more gradual nature (erosion). Ringier, for example, was never too reliant on Classified as a source of revenues. Therefore, for the purposes of this study we define Ringier’s environmental scarcity as erosion.

A complete (coding-framed) content categorization regarding the sensemakers’ most pertinent interview statements is outlined in Table 9 as part of the results’ discussion and analysis.

3.4.2 Data selection criteria

CEO Marc Walder personally coordinated the case study on behalf of Ringier.

On the basis of Ringier’s annual reports (2008-2018) combined with the timely publication of Lüchinger’s work (2019), the foundational events (Table 3) defining the digital transformation (2008-15) were selected and eventually cross-checked in interviews. A preliminary interview guide (Annex III) was developed, primarily inspired by below introductory outline of the study that was shared with Marc Walder on January 7, 2019 as the kick-off of the research study:

“This thesis makes a distinction between the board’s collective cognitive capabilities and domain expertise. While both are relevant to firm performance, cognitive capabilities – specifically, sensing and sensemaking – are of increasing relevance to firm performance in a distributed, fast-paced and transformative world.
The framework of dynamic capabilities (DC) is introduced, which according to Helfat (2007, p. 1) is defined as “the capacity of an organization to purposefully, create, extend, or modify its resource base.” To date, dynamic capabilities have been addressed at the managerial level only. This thesis attempts to develop DCs at the board level. The board of directors should sense and make sense of relevant developments and recombine existing and new resources and capabilities accordingly. Inputs from the environment and the lower levels of the hierarchy are of significant importance.
How can bottom-up stimuli/data inputs reach and be processed by Top Management Team (TMT) as well as the board of directors?
The following working hypothesis is proposed: a (strategic) board of directors should facilitate challenging Upper Echelon’s (TMT and board of directors) top-down predictions/prediction models with bottom-up data and stimuli to minimize prediction error and to further develop prediction models. Consequently, firm performance should be positively impacted. Inputs from the environment and the lower levels of the hierarchy are of critical importance. How are these inputs/stimuli filtered and interpreted by Upper Echelon? The capability to enact a firm’s environment rather than to adapt to an environment that is perceived to be exogenously objective is stipulated as a critical dynamic board capability.
The case study of Ringier provides a fertile ground to further develop and test the hypothesis.”

On this basis, it was requested to have access to family owners, board members, executive leadership and middle management. As outlined above (‘3.3. Boundaries of the study’), the universe of ‘sensemakers’ was limited (see Tables 4 and 5).

The complete contents from the authorized case study interviews (Annex IV) as well as selected interview statements by Marc Walder in the Harvard Business Case Study (Oberholzer-Gee, 2012; Annex VI) have been included as data input for the qualitative content analysis.

The contents of the Lüchinger publication (2019) have been generally considered but not included in the qualitative content analysis, primarily for two reasons: (1) interview statements would have only marginally complemented the interview material that this dissertation has originally generated and (2) translation from German to English could lead to distortions unless explicitly authorized by the interviewees concerned.

Overall, however, Lüchinger’s work represents a very critical, relevant and reliable (well documented) source (see also Appendix V) to better assess and qualify the findings of the qualitative content analysis.

3.4.3 Rigor: reliability and validity

More than seventeen hours of audio-interview material (including 'Engaged Scholarship', Annex VIII) was smartphone-recorded and transcripted with *Trint Automated Transcription Software*, manually reviewed/summarized for overall clarity, and translated into English (where required) before being shared with each of the sensemakers. No software program was applied to the analysis of the interview material.

In terms of transcription rules, non-verbal expressions (such as laughter, pauses for thought, or hesitation, for example) were not transcripted. All wording was kept to the original audio material. Incomplete sentences were completed to be grammatically correct. Unless corrected by the interviewee during the review processes, the text reflects the original interview content.

After considering the sensemakers' respective feedback - which was of rather stylistic and contextual but not of any material nature - a revised version was prepared and resubmitted for review generating further feedback of, again, a rather stylistic nature. The final versions were then individually authorized in writing (see Annex IX).

The reliability and validity of the data has been further strengthened by the following three factors:

1. ***Two interviewers conducting individually the interviews***. Michael Gasser, a Master student at the University of St. Gallen with a Master thesis dedicated to applying a Free-Energy Governance lens to Ringier's digital transformation as business model innovation (Gasser, 2020), conducted the first set of interviews with Marc Walder and Annabella Bassler (Annex IV), for example. DBK conducted the Engaged Scholarship interviews with Marc Walder and Annabella Bassler (Annex VIII).
2. ***Significant time delays between two interviews/same interviewee/two interviewers***. Michael Gasser and Bijan Khezri each conducted an individual interview with Claudio Cisullo within a time interval of roughly four months. This time-interval supported a sensemaking methodology as the interviewee could further reflect upon some of the research propositions during the second interview with DBK. During the second interview, the interviewee was more

likely to open up beyond the natural inclination towards ‘information transmission’ but engaged in sensemaking ‘dialogue’.

3. ***Engaged Scholarship.*** Finally, Marc Walder and Annabella Bassler were presented with the very final research propositions and were given the opportunity to provide feedback statements (see Annex VIII: Engaged Scholarship). Further, leaders from entrepreneurship (Steve Case) as well as private equity (Jan Ståhlberg) have been invited to reflect upon and comment on the Free-Energy Governance framework and its research propositions.

Table 8 provides a summary of the empirical study’s rigor.

Table 8: Summary - quality criteria (Mayring, 2015)

Quality Criteria	
Construct validity	*Structure*, *cognition*, and *capabilities*, as defined in this dissertation, provide highly valid and theoretically grounded constructs. See Table 7. Despite the rather abstract nature, the constructs could be rigorously and consistently matched with the contents.
Content validity	*The selection of sensemakers* – in fact, all of them have been at the heart of the essential phase of strategic renewal/digital transformation – 2008-15 (see Table 4); and *the content review process* as outlined above, have ensured a high degree of content validity. However, as highlighted in ‘Boundaries of the study’ (3.3), the content validity could have been substantially improved if middle- and field-management as well as other board members could have been made available for sense-making interviews.
Internal validity	The internal validity has been strengthened by the fact that two interviewers, respectively, interviewed the same interviewees on the basis of either the same interview guide and/or research propositions.
Sensemaking methodology	Given Ringier’s high public profile and looking through the “situational logic to how people

	construct sense" by way of 'situation-defining communication strategies and tactics', "designed for transmission rather than dialogue" (Foreman-Wernet, 2003: 6-7), one should expect Upper Echelon's communication strategies and tactics to be "designed for transmission rather than dialogue." Particular attention was given to the latent rather than just explicit content.
External validity	The external validity has not been tested. In fact, given the novelty of applying neuroscience's 'free-energy principle' to organizational science, there is no case study to date that has studied the triplet of structure, cognition, and capabilities in the context of strategic renewal and firm survival. However, the process of 'Engaged Scholarship' has tested the research propositions with external parties (Steve Case, Jan Ståhlberg).

3.5 Variables

"Strategy researchers are increasingly turning their attention from examining the impact of strategic choices on firm performance to examining the factors that determine strategic choices at the firm level."[214]

3.5.1 Dependent variable

The choice and operationalization of the dependent variable is the heart of the research project. At the time of setting the initial research design, the focus of this dissertation was resolutely set on firm performance. However, as the research project advanced and as theory development and case study increasingly cross-fertilized, it became apparent that firm performance as a dependent variable may not be insightful enough, could potentially prove to be of limited relevance to practice, and is unlikely to provide a promising basis for future research.

In effect, firms may satisfy pre-defined performance KPIs but are nonetheless already seeding the grounds for future failure, putting their very survival at risk. Therefore, one must not only go beyond the surface of apparent 'P&L success', which may be unsustainably generated at the expense of balance-sheet gearing, for example. But we are in need of a framework that provides a rigorous 'early-warning check-list', beyond financial KPIs. **Free-Energy Governance provides such a forward-oriented framework laying the basis for predicting 'survival-at-risk', centered around structure, cognition, and capabilities.**

When, in 2008, Ringier kicked-off 'digital transformation' in the face of entropic erosion in its traditional print business (environmental scarcity), the EBITDA portion attributed to digital business was zero. By 2015, that EBITDA share increased to roughly 60% (and 71% in 2018). On the basis of this 'self-designed' 'P&L' perspective, one is tempted to conclude that the digital transformation has been successful and should continue to be for as long as that share keeps rising.

The objective of the study could then be to attempt 'reverse-engineering' a causal link between 'successful digital transformation/performance' (dependent variable) and significant 'Ringier success variables' (independent variables) such as: (1) CEO path-

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[214] Wiersema, M. F. and Bowen, Harry P. 2009. **The use of limited dependent variable techniques in strategy research: issues and methods**. Strategic Management Journal, 30: 679-692; p. 679

dependency and tenure; (2) Chairman/CEO rapport (depth, scope, and mutual trust); (3) establishment of M&A department; strategic growth in form of M&A and joint-venturing; (4) top-down leadership approach; (5) 'fast-follower' rather than first-time innovator; (6) private vs. public company status; (7) close alignment between CEO and family-shareholders; and eventually more 'ecological' variables such as (7) operating in a small country (Switzerland), for example, mandating international expansion early-on to secure growth.

In a discontinuous and distributed world, the firm's lifespan is increasingly shortening (see 1.1. Problem Analysis), and the need for a long-term perspective is no less urgent. **Research communities and practitioners alike are challenged to move beyond a singular focus on firm performance and study the anatomy of decline and firm survival**. It is the focus on firm survival that challenges Upper Echelon to question the firm's purpose and right to existence.

On this basis, ***'the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival'*** has been established as the dependent variable.

3.5.2 Independent variables

Three research propositions have been advanced:

P1- Recognition Density **(Structure)**
The stronger a firm's cross-hierarchical top-down/bottom-up/lateral recognition density between and within governance and operational channels, *the stronger the firm's orientation towards free-energy (surprise) minimization (P1.2), the stronger the board's impact on sustainably initiating and guiding continuous strategic renewal (P1.3), the higher the firm's strategic control (P1.4), the less significant a firm's top-down approach cultivating a form of CEO-centrism in strategy-ownership (P1.5), and* ***the stronger the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival (P1.1)****.*

P2- Environmental Enactment **(Cognition)**
The stronger a firm's cognitive orientation towards environmental enactment and innovative abduction*, the stronger the firm's orientation towards free-energy (surprise) minimization (P2.2), the stronger the board's impact on sustainably initiating and*

guiding continuous strategic renewal (P2.3), the higher the firm's strategic control (P2.4), the weaker the firm's inclination to be a strategic 'fast-follower' (P2.5), and ***the stronger the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival (P2.1)****.*

P3 - Dynamic Board Capabilities **(Capabilities)**

The stronger the board's DMN-centric duality management of exploitation vs. exploration and financial vs. strategic control, *the stronger the firm's orientation towards free-energy (surprise) minimization (P3.2), the stronger the board's impact on sustainably initiating and guiding continuous strategic renewal (P3.3), the higher the firm's strategic control (P3.4), the stronger the potential for 'wholesale renewal' (P3.5), and* ***the stronger the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival (P3.1)****.*

Therefore, the independent research variables are (1) recognition density, (2) environmental enactment (embracing the world as a 'first-line innovator' rather than 'fast-follower'), and (3) dynamic board capabilities in form of duality management.

Against the background of the 'Boundaries of the study' (see 3.3 above), the board's duality management role concerning a firm's real-time vacillation between exploitation and exploration could not be examined. **Therefore, the 'capability' variable is duality management of financial vs. strategic control.**

3.5.3 Control variables

Two essential variables have a controlling impact.

3.5.3.1 Ownership structure: family-control

In principle, ownership structure is an important ‘control’ variable. Whether a firm is publicly listed, PE sponsored, or family-controlled strongly shapes the (1) governance and leadership conditions, (2) strategic target models and time horizons thereof, and (3) the degree to which outside forces can exercise pressure; e.g., the absence of capital markets’ ‘short-termism’ is rather absent in a family-controlled business (though, not always for the better). Credit-imposed governance is only as good as the bank and its bankers.

A family-controlled firm is by definition a unique ‘construct’ abiding to laws that are often inseparably linked to the personalities that wield controlling power. Consequently, there is an underlying degree of complexity that makes each family-controlled firm rather unique.

3.5.3.2 Environmental scarcity in form of entropic erosion in traditional print

The General Theoretical Part (Section 2.1.3) introduced the concept of *environmental scarcity* (Schmitt et al., 2016: 363; Table 1).

While the decline in the traditional print media market, for example, was rather gradual, the challenge was nonetheless not one of perception (everyone saw it) but one of interpretation: What strategy? Diversification/cross-fertilization/business model innovation? Exit and/or new markets (e.g., marketplaces, e-commerce)? These were the predominant questions shaping and continuing to reflect traditional media’s Upper Echelon strategic renewal considerations. While gradual in decline of size, the predominant challenge was not one of sensing but sensemaking. Survival has been at stake ever since. Therefore, this dissertation defines environmental scarcity in form of gradual decline where the challenge remains nonetheless one of sensemaking rather than sensing as ***entropic erosion***.

3.6 Results

3.6.1 Presentation of results

The complete and finally authorized interview contents are provided in Annex IV.[215] Table 9 below provides a summary of the relevant highlights from the sensemaking interviews.

Table 9: Content categories – highlights from the sensemaking interviews

Structure	*top-down*	➢ I do not want to sound egocentric. But within our executive board, I was the only one to drive this transformation strategy forward. (Walder, 2019a) ➢ Where I think innovation needs to come from is at the very top. (Walder, 2019b) ➢ So, where do I get the confidence to make these kinds of decisions? I trust Michael Ringier judgment. (Oberholzer-Gee, 2012: 9, quoting Marc Walder)
Structure and Capabilities	*top-down; financial control*	➢ One of the very first measures I took upon my appointment was to create an M&A Department. (Walder, 2019a) ➢ M&A was the focus. (Walder, 2019a) ➢ [In 2008], the four of us [three family members, representing 100% ownership, and Marc Walder], during this crucial meeting that lasted 90 minutes, we agreed that we will be taking risks and acquire new businesses. Probably marketplaces. (Walder, 2019a) ➢ The board of directors supported, pushed and challenged the transformation so that all these acquisitions could really be mastered. Furthermore, the network of the board of directors was important. The role of the board of directors has always been very, very good, challenging and supportive. When it comes to the volume of financing, courage is always part of the equation. (Bassler, 2019) ➢ In data and tech, we had almost no people and today we have a strong team. Ringier has spent enormous financial resources on transformation and had to acquire many skills. (Bassler, 2019) ➢ Onet is a good example: the real work started once we completed the acquisition. I don't know how many add-on acquisitions we had to make to get to where we are today with Onet. (Bassler, 2019) ➢ 'Where would we be now if we hadn't invested?' is an essential question. Upon reflection, one must conclude that the investments were absolutely necessary. Digital transformation was not a 'nice-to-have' but a 'must-have' change. Our company would lack

215 After final reviews, all interview statements were authorized in writing by each interviewee, respectively. See Annex IX.

		nearly 80% of its EBITDA if we had not invested in digital businesses. (Bassler, 2019) ➢ We have learned from KKR how to make companies financially fit: a business plan, roadmap, and milestones are clearly defined. If the roadmap is not adhered to, the essential question is how to realign resources and management focus. (Bassler, 2019) ➢ We have a very open dialogue on the Board that colleagues always know how high our financial head room is still if we want to go to a 'net debt to EBITDA' multiple of x… We focus on EBITDA and cash. (Bassler, 2019) ➢ Within the entire group, I believe it is fair to say that the two people who have been crucial to stimulation are myself and Robin Lingg. All the important initiatives came from me. It's absolutely me. 24/7. Besides that, I think Robin is somebody who is extremely pushy. At the top level, these are the main two stimulation drivers. (Walder, 2019b) ➢ The alignment teams are for the exchange of best practices and the alignment of strategy, harmonization of technology issues or issues related to platforms - less for scouting companies. (Walder, 2019b) ➢ The question of how Ringier could be described as a group led to intensive discussions. We are not a financial holding. And at the end, consensus emerged around 'strategic media holding'. (Walder, 2019b) ➢ One of the main KPIs is the digital part of the EBITDA. That's what we measure at the end of the year. Ringier has done the transformation from zero EBITDA digital in 2011/2012 to 71 percent in 2018. So, within six years from zero to 71 percent. That is probably the most important KPI. (Walder, 2019a) ➢ The financial dimension has certainly risen in importance as reflected in the composition of our board. (zu Salm, 2019) ➢ The transformation process has been rather top-down driven so far. This enabled a high degree of flexibility and responsiveness but certainly also increased performance-dependency on a rather small group of decision-makers. (zu Salm, 2019) ➢ Walder has been driving the transformation process with the strong backing of Michael Ringier, as representative of the controlling family. (zu Salm, 2019) ➢ Ideation at the mid- and lower management level rarely reached the attention of the board. The next challenge is to integrate the bottom-up approach and establish it as an integral part of the corporate DNA. (zu Salm, 2019) ➢ We continue working towards balancing a centralized top-down approach with more bottom-up input to match the requirements for an increasingly decentralized world. We are committed to continue improving the design of our strategic decision-making processes: top-down and bottom-up. (zu Salm, 2019) ➢ Use the financing and operational governance expertise from a firm such as KKR. (zu Salm, 2019) ➢ The board of directors has an advisory and questioning role, on the one hand to challenge the management and on the other hand

		to offer the family a good basis for decision-making (Cisullo, 2019) ➢ The main drivers behind the digital change were the acquisitions. The number of acquisitions (50) and the related financing (almost CHF 2 billion) summarizes the story. (Cisullo, 2019) ➢ Well, first of all, Ringier has 105 participations. So, we can really call the Group a diversified company. It's very complicated and very challenging. Just think about budgeting. Just think about the consolidation process and then you know. (Cisullo, 2019) ➢ We are not a start-up company. (Cisullo, 2019) ➢ Now, beyond publishing and digital marketplaces, our challenge is to develop the third leg that can secure future growth. We have not found it. I doubt whether it can come from within the company as it has to be something radically different from what we do today. (Cisullo, 2019) ➢ The digitization of our business also required a change in the composition of the board of directors. Today we have new committees and new members, such as bankers. (Ringier, 2019)
Structure and Capabilities	*top-down/bottom-up; financial vs. strategic control*	➢ The decisions for important radical innovations and acquisitions have always been top-down. There are now incremental initiatives and acquisitions that are also bottom-up. (Bassler, 2019) ➢ We have a sensational team, and I am an advocate of it. It is all about people. You have to see how you integrate them so that we can get the speed to handle this complexity. The international alignment teams are very successful in doing this. (Bassler, 2019) ➢ Product and platform innovations must emerge from within the business. Top management must provide the direction while the rest of the organization must support the execution bottom-up. (Walder, 2019b) ➢ I like to believe that during the past two years, in particular also with the appointment of Lukas Gähwiler, we have strengthened the effectiveness of our board. We critically review and question ourselves. Further, we reached out beyond the board-table to connect with the rest of the organization - beyond just the usual CEO information flow. (Cisullo, 2019) ➢ Indeed, the traditional concept of the board getting together a few times a year, maybe some conference calls in-between, is not working any longer. Certainly not, if the board mandate is to fully assume its strategic responsibility, which is the law in Switzerland. (Cisullo, 2019) ➢ To put a plain vanilla view on the table and to challenge the management on any given topic and situation is the role of the board of directors. The purpose of the board of directors is to develop a good basis for decision-making and to challenge the management, as well as to assess the situation in the most pressing areas. (Cisullo, 2019) ➢ I will not put or pick a name of any particular person. The transformation has been a team effort. It is a whole ecosystem, within and outside the company. (Cisullo, 2019) ➢ Good transformation never ends. (Cisullo, 2019)

		➢ Well you know, I think everything has to do with motivation; with having the right people on the field. I think it is the responsibility of the senior management to motivate all team members and not make them feel like a guest of this journey. (Cisullo, 2019) ➢ We are currently building a new aircraft while flying the plane. Therefore, we always have to be able to think in two different ways: exploiting existing cash flow and exploring future sources of profitable growth. (Cisullo, 2019) ➢ The fact that the transformation has been rather top-down and M&A driven has not compromised our in-house innovation capability. On the contrary, I would say that we have not only acquired so much digital talent but Ringier does a great job in empowering those people to drive innovation. (Cisullo, 2019) ➢ M&A was necessary in order to acquire competencies. Before the transformation, there was simply no know-how in the digital field. Now the M&A approach is changing as innovation from within is gaining in importance. (Ringier, 2019) ➢ For quite some time now, we have been in a certain status quo. Now we have to challenge ourselves to move to the next level. (Ringier, 2019) ➢ The innovations that are emerging bottom-up are carried out directly by the relevant management resources. (Cisullo, 2019) ➢ We have a lot of innovation-centric thinking in terms of openness to new business opportunities. So out of a scale of ten, I would say that Ringier scores eight in most of the important fields relevant to digital transformation. (Cisullo, 2019) ➢ Digitization must be seen in a broader perspective than pure financial KPIs. It is about attitude, processes, efficiency and many other skills and aspects. It is a matter of mindset. (Cisullo, 2019) ➢ At the end, acquiring digital businesses was critical for Ringier in terms of skills and brains, which understand digitalization and market needs. (Cisullo, 2019)
Cognition	*top-down; environmental enactment vs. adaptation*	➢ I think we are fast and smart followers. I think we are extremely good at execution. We are extremely good at observing and analyzing the market environment. (Walder, 2019a) ➢ We completely fucked up, and now 80 percent of the digital advertising money is going straight to Google, Facebook, Amazon, and the likes. The media industry hasn't found an answer to that. That's 80 percent of the cake. We are all now focusing on data and data alliances. But it is very challenging to catch up on that front. We need to anticipate the next big wave rather than chasing the 'lost wave'. (Walder, 2019a) ➢ Role models like Schibsted Media Group and Axel Springer gave us the confidence that our strategic orientation was the right one and helped us proactively identify potential opportunities. (Bassler, 2019) ➢ We are 'fast-followers' rather than first-line innovators. We spot relevant opportunities and we understand how to execute them. This is certainly an important core competence. Whether this is enough for the future remains to be seen. (zu Salm, 2019)

		➢ Ringier is now trying to move from acquisition-driven change to the development of its own ideas. (Cisullo, 2019) ➢ First you have to learn to walk before you can run. We learned how to run during the transformation. Now we have to make sure that we run faster than others. The future will show whether we are capable of doing this. (Cisullo, 2019)
Ownership Structure	*family control*	➢ A family business like Ringier - closely aligned and fast decisions - is a tremendous advantage relative to a listed company. (Walder, 2019a) ➢ This triangle of myself, the board and the family-shareholders laid the foundation for success. We were able to make decisions fast and often faster than competitors. At times, this was a critical competitive advantage in the M&A market. (Walder, 2019a) ➢ The family was behind the M&A-based transformation. There was a high level of support in the area of decision-making. (Bassler, 2019) ➢ The whole management was completely empowered by the Ringier family, which played such a fabulous, courageous role in this whole transformation process. (Bassler, 2019) ➢ Ultimately, it's always a family decision. They represent the owners of the company and thus bear the responsibility. However, in order to make a decision, you need sound information and advice. This is a critical role the board can assume. (Cisullo, 2019) ➢ With Michael Ringier, the leadership of the board has been rather consensus driven. We should question the core of our DNA and activities much harder and more critically. But, in the end, the board's strategic role is a matter of ownership structure: private/public or concentrated/distributed. (Cisullo, 2019) ➢ An acquisition was never made without the consensus of the entire family. (Ringier, 2019) ➢ At Ringier, people have a high priority. In particular, the constellation of the board of directors. (Ringier, 2019)
Environmental Scarcity	*erosion of traditional print business*	➢ It was clear that we had to move because we were sitting - to put it dramatically - on a sinking ship. (Walder, 2019a) ➢ The entire media industry completely failed to understand Google and Facebook… Today, Facebook has more than US$50 billion in turnover from advertising. (Walder, 2019a) ➢ Data-driven advertising was their [Google and Facebook] weapon. But we have completely missed and then fucked-up the leverage of data. (Walder, 2019a) ➢ We saw in 2012 that print declined more sharply than we had expected in 2008, for example. In 2012, the sense of urgency was rising. (Bassler, 2019)

3.6.2 Discussion of the results

"Considering the study's research period (2008-2015), it can be concluded that the transformation process has been rather top-down. It was primarily CEO-driven through M&A and joint-venturing and supported by a board of directors that has been predominantly concerned with financial control. In fact, funding has been a critical consideration in this transformation process."

Annabella Bassler, CFO, (2020: Annex VIII)

"… during the first phase of transformation, 2008-2015, the criteria of Free-Energy Governance as described in the propositions of the research study were not fulfilled… Indeed, the period between 2008-2015 was rather wild, fast, courageous and opportunistic. It was strongly top-down and financial control driven, i.e., through external growth and innovation… As a result, the Group had during those years more of a 'financial' holding character than of an integrated operating Group of companies… But it was this phase that secured the firm's long-term survival. However, the Group-wide and bottom-up alignment and empowerment of bottom-up processes that followed after 2015 have been equally important to the sustainability of value creation and firm survival. It really depends on where you are in the firm's lifecycle. I would tend to agree that eventually, firm survival is critically dependent on the continuous and sustainable interaction of top-down and bottom-up processes."

Marc Walder, CEO (2020: Annex VIII)

In summary, the period subject to analysis (2008-2015) is portraying a firm that has ideated and implemented strategic renewal (i.e., digital transformation):

(1) top-down in the absence of top-down/bottom-up recognition density (*structure*),

(2) embracing the world as an adaptation-oriented 'fast-follower' rather than an enactment-directed 'first-line innovator' (*cognition*), and

(3) in pursuit of M&A and joint-ventures in a battle for digital transformation, eventually leading to an overemphasis of financial control at the expense of strategic control (*capabilities*).

Before the independent as well as control variables are addressed in more detail, it is important to assess from today's perspective the phenomenon this study is interested in explaining - *firm survival in a distributed and discontinuous world.*

The ***dependent variable*** is *"the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival".* The sustainability of continuous strategic renewal and the firm's prospects for survival are inseparably and causally linked. As the sustainability of continuous strategic renewal falters, the firm's prospects for survival are likely to correspondingly deteriorate.

When is a firm's life truly terminated? The firm is a legal fiction. Its assets may well continue prospering while its original legal foundation may be extinct. A change in control is independent of the firm's prospects for survival. Actually, in certain cases it may enhance it, such as PE investment entering the capital structure, for example.

This dissertation is less interested in a 'hard' time-marker of a firm's life - such as bankruptcy or members' voluntary liquidation – but is driven by the objective to establish FEG's triplet (structure, cognition, capabilities) not only as a governance framework fostering a firm's capacity for successful strategic renewal but as an early-warning system predicting that the firm's relevance and, hence, survival may be increasingly at risk.

Before we evaluate the independent and control variables in the context of Ringier, we should assess more financial-based metrics indicating early signs of a potential threat to Ringier's survival. Three key criteria emerge, possibly indicating 'an impending storm'[216]: (a) over-dependence on credit-/debt-financing, (b) slowing growth in profitability, (c) need for a (possibly control-impacting) recapitalization to sustain debt-financed strategic renewal initiatives of the past. Today, we have the benefit of time-in-distance to the research period (2008-15).

(a) over-dependence on credit-/debt-financing

Ringier's balance sheet has not been analyzed in detail due to rather limited information being published. Overall, however, it is fair to assume that given a net investment of roughly CHF900m during the period of 2008-2015 (i.e., at least CHF1.8bn in M&A and joint-venturing related investments less a capital inflow of roughly CHF900m resulting

[216] "Our analysis suggests that **any deterioration in gross margins, current ratio, or debt-to-equity ratio indicates an impending storm**" (Collins, 2009: 76; emphasis by DBK);

from divestments), bank financing must have been an increasingly important topic. This view is supported by numerous interview statements.

In this context, in particular the following statements from CFO-Bassler are of interest: "*Funding has been a critical consideration in this transformation process*" and "*as a family business, we have a strong focus on the cash perspective*". "*The role of the board of directors has always been very, very good, challenging and supportive. When it comes to the volume of financing, courage is always part of the equation*." (Bassler, 2019: Annex IV) "*We have a very open dialogue on the Board that colleagues always know how high our financial head room is still if we want to go to a 'net debt to EBITDA' multiple of x. And I have always communicated this clearly at the time of the budget as well as during the financial year. There are no surprises here. We focus on EBITDA and cash*." (Bassler, 2019: Annex IV). "*After we acquired Onet and JobCloud, we breached a credit covenant once, which was immediately solved by a waiver of the bank*." (Bassler, 2019: Annex IV)

It is fair to conclude, that financial leverage and the sustainability thereof must have been increasingly important board topics.

(b) slowing growth in profitability

A more detailed analysis of profitability is restricted by what is publicly available. Table 11 (Ringier profit analysis, 2010-2018; Annex II) provides a rather 'flat' picture. On the basis of published information, it is fair to conclude that the outstanding growth in the digital share of EBITDA has not produced an equally significant growth in absolute profitability. "*If one wants to assess the core profitability along the transformation process, then the picture is unmistakable: print declined too rapidly compared to the growing digital revenues to compensate for this decline*." (Bassler, 2019: Annex IV)

Since 2016, there has been no absolute EBITDA growth. The highest absolute profitability measured in EBITDA was in 2013 (CHF123.1m), then EBITDA significantly dropped in 2014 (CHF82.3) to only slowly growing in 2015 (CHF96.1) and eventually plateauing from 2016-2018 (CHF108.3m; 110.6m; 113.0m, respectively). At the point of completing this study in February 2020, the 2019 annual report was not publicly available.

Developments of profit after tax (publicly reported until 2017) lead to believe that free cash-flow has been rather limited or non-existent. The concern for the level of operating cash-flow is highlighted in Bassler's statement: "*As a company, you have to see how you can ensure that the operating cash flow from all our subsidiaries is sufficiently high so that we can afford the investment activities*." (Bassler, 2019: Annex IV)

On this basis, it is fair to conclude that the M&A/joint-ventures based digital transformation has not produced the promised level of profitability required to compensate for the decline in print and fund a - most likely –leveraged balance sheet. In that regard, the statement of Michael Ringier is notable: "*For quite some time now, we have been in a certain status quo. Now we have to challenge ourselves to move to the next level. Without investments, digital business models will lose profitability*." (Michael Ringier, 2019; Annex IV) More investment is certainly required 'to move to the next level'.

However, if it was not for the financial-control centric digital transformation from 2008-2015, Ringier would have possibly not survived: "*Where would we be now if we hadn't invested? is an essential question. Upon reflection, one must conclude that the investments were absolutely necessary. Digital transformation was not a 'nice-to-have' but a 'must-have' change. Our company would lack nearly 80% of its EBITDA if we had not invested in digital businesses*." (Bassler, Annex IV) This statement further supports the understanding that Ringier's digital transformation, at least in terms of profitability, has been rather a zero-sum exercise: what was added through M&A in the digital space was lost in the core business.

In summary, from a perspective of profitability analysis, the image emerges of a firm that has been incredibly transaction-active, buying new sources of (digital) profits, but failing to create synergies between the old and new businesses as a source of new sustainable profit growth. Actually, there was rather little *digital* transformation at the core.

The value-creation potential resulting from cross-fertilizing publishing and marketplaces appears to be non-existent, despite the statement of board member Claudio Cisullo: "*Ringier consists of two business models (publishing and marketplaces), which **together generate added value***." (Cisullo, 2019: Annex IV) In fact, the debt-financed digital transformation was not synergy-exploiting but rather diversification-centric at the cost of long-term profitability growth.

Considering the balance sheet's most likely limited capacity for continued funding of significant M&A transactions, today the company is likely facing a fragile cocktail of day-to-day financial risk management while searching for the next move to make (‘combined’) sense of the *transformative* transactions (2008-15). Indeed, just from a profitability point of view, the question arises whether Ringier would have been better off to “exit definitely or renew obsessively” the core business (Collins, 2009: 35) rather than adding - by way of M&A - new activities.

(c) <u>need for recapitalization</u>

Against the background of above discussion, it is fair to question whether the capital investment through insurance company Mobiliar in February 2020 was most likely and primarily financially motivated. If ‘financial business models complementing marketplaces’ is the strategic objective, there is no need to cede 25% of the Group’s share capital. No matter how convincing the ‘strategic fit’, non-equity-based partnerships may achieve the same result and provide possibly a higher degree of agility, in particular beyond Switzerland.

Following KKR’s funding of Axel Springer’s ‘public-to-private’[217], the European media sector’s ‘sense of urgency’ to secure firing-power must have intensified ever since. This is in particular true for Ringier given its joint-ventures with Axel Springer in both Switzerland and Central Europe. Mobiliar, by all means, may turn out to be a far more promising partner than traditional PE could ever be. More importantly, Mobiliar as an insurance company is long-term oriented.

Ringier’s CEO Walder may have found in Mobiliar the perfect partner to take advantage of the past learnings and re-define the next chapter of ‘greatness’. As a result of the Mobiliar transaction, Ringier’s balance sheet is likely to be substantially de-risked and continued strategic renewal gets a new lifeblood. However, it is important to highlight that as a result of this transaction, Ringier doubled down on print and diluted its shareholding in marketplaces below 50%. The next moves will determine, whether the Mobiliar capital-partnership is backward- or forward-propagated.

Right from the start of this study back in 2019, Marc Walder introduced Markus Hongler, CEO of Mobiliar, as a ‘sensemaking interviewee’ to provide the perspective of a joint-venture partner (in Scout24); see Annex IV. This reflects not only a strong basis for trust but a foundation for strategic alignment. The fact that Mobiliar’s

[217] Germany’s Axel Springer AG is Europe’s largest media company and an outstanding leader in digital transformation. https://www.reuters.com/article/us-axel-sprngr-m-a/kkr-becomes-axel-springers-biggest-shareholder-idUSKCN1VG1DK (copied on February 8, 2020)

Chairman as well as its CEO join the Ringier board should be embraced as an indication that 'business-as-usual' at Ringier will be challenged and subsequently may improve its survival prospects

In this context, Mr. Hongler's statement is insightful: "*Due to the form of a cooperative or a family-owned company, there is a restriction in the procurement of capital for expansion. A capital increase is only possible by consensus or through outside capital. When borrowing capital, the strength of the balance sheet is everything. There is no pressure from the stock market. This ensures that certain projects are not stifled if they are not running at full speed and, on the other hand, that less has to be invested for roadshows, etc.* ***The responsibility for bringing pressure to bear on the company lies heavily on the shoulders of top management and the board of directors***." (Hongler, 2019: Annex IV)

In summary: an over-dependence on credit-/debt-financing against a background of slowing growth in overall profitability appear to have eventually imposed a need for recapitalization. It appears that **the Mobiliar transaction is for now but another (financial control reinforcing) milestone in Ringier's pursuit of ensuring its long-term relevance as an independent (digital) media company.**

Lüchinger's book title 'Ringen um Ringier' [The Struggle for Ringier] remains valid. The Mobiliar transaction is not the concluding chapter in Ringier's 'survival battle', a battle that has characterized the strategic transformation form a traditional print publishing business to digital journalism and digital marketplaces.

More importantly, after 12 years and at least CHF 1.8bn worth of investments (primarily in form of M&A and joint-ventures), Ringier has more or less stabilized profit levels to 'continue staying in the game'. But survival for the sake of survival cannot be a purpose. 'Being ahead of the game' rather than 'staying in the game' is the ultimate purpose of a firm's existence.

In that regard, it is worth recalling Collins (2009: 148): "Great companies passionately adhere to a set of timeless core values and pursue a core purpose beyond just making money." For now, Ringier's 'timeless' purpose – beyond digital transformation – is not clear. With more distance in time and deeper access to privileged data, Mobiliar's recapitalization of Ringier should be viewed as more than a 'hangover measure' of M&A-centric strategic renewal (2008-15).

We now turn to the independent variables: (1) recognition density, (2) environmental engagement, and (3) dynamic board capabilities. Indeed, the independent variables not only design a new governance framework but should be equally of relevance as an early-warning system predicting 'the impending storm' threatening firm survival.

***Independent Variable*s**

(a) <u>recognition density</u>

The predominance of a top-down approach during the period of 2008-2015 is unmistaken and confirmed by senior leadership. In that regard the statement of Annabella Bassler in response to the Free-Energy Governance research propositions (Appendix VIII: *Engaged Scholarship*) is notable: "*However, after 2015 there were no more acquisitions with major impact on the direction of this transformation process. The acquisitions were more 'incrementally driven' and bottom-up generated. One example of this 'bottom-up' power within the Ringier-Group is our Tech&Data team, which is based in South Africa. The 'bottom-up' power is continuously strengthened by different collaboration tools such as Slack. They allow each member to contribute, independently of its hierarchical position. This is essential for the Group and the top-leadership to pick up bottom-up signals through the proximity to resource markets such as clients, products, and technologies. This structure is not only established in Tech&Data but also in 'Media' and 'Marketplaces', the Group's two core business pillars. Overall, I would say these organizational changes have not only empowered 'bottom-up' approaches but have changed the strategy process. I guess, more akin to a Free-Energy Governance framework where predictions from the top are continuously challenged and enriched by data input from the bottom*." (Bassler, 2020: Annex VIII)

The following three questions arise:

- To what extent are the post-2015 bottom-up processes and emergent management culture as described by Annabella Bassler (2020: Annex VIII) truly a bottom-up fertilization of top-down predictions and prediction models or rather just an exploitation-centric process of productivity enhancement and operational alignment imposed by the complexity of a 'diversified holding' structure?
- Has the top-down approach during 2008-2015 left too deep of a mark on the organization to truly allow for bottom-up innovation to materialize beyond incremental initiatives?

- Or more importantly**: is Ringier protected from another ‘Google moment’ that “*we have completely missed*”?** (Walder, 2019a: Annex IV)

In this regard, it is crucial to look through the “situational logic to how people construct sense […] designed for transmission rather than dialogue” (Foreman-Wernet, 2003: 6-7).

Selected interview statements from Annabella Bassler (CFO), Marc Walder (CEO), and board director Claudio Cisullo, respectively, together portray a company that since 2015 has heavily invested into ‘alignment’ processes to turn a highly diversified (financially oriented) holding structure consisting of more than 100 rather autonomous legal entities into something more strategically coherent (‘aligned’).

But the bottom-up processes appear to be more exploitation-centric rather than laying a foundation to power continuous and purpose-directed strategic renewal. It is also important to highlight that the interview statements (Annex IV) were not just referring to the study period (2008-2015) but to date.

1. “*So, where do I get the confidence to make these kinds of decisions? **I trust Michael Ringier’s judgment***.” (Oberholzer-Gee, 2012: 9, quoting Marc Walder; Annex: VI)
2. “***Where I think innovation needs to come from is at the very top**. I think we as senior leadership still have to assume responsibility to do the right things. On a bigger scale. I also see us as evangelists that move forward and take everybody with us. I want us to stay young, fresh, smart and step into that learning curve. I really think the pressure should be on us as leaders. Within the entire group, I believe it is fair to say that **the two people who have been crucial to stimulation are myself and Robin Lingg**. All the important initiatives came from me. It’s absolutely me. 24/7. Besides that, I think Robin is somebody who is extremely pushy. At the top level, these are the main two stimulation drivers. **Product and platform innovations must emerge from within the business**. Top management must provide the direction while **the rest of the organization must support the execution bottom-up***.” (Walder, 2019b: Annex IV)
3. “*An important question is: ‘how do you enable that we can even manage at this speed of transformation and cope with its complexity?’ We are very successful in **having international alignment teams. We have someone who can track down all the trends for the entire publishing process and drive forward projects** in this particular area, for example. We have the same set-up for marketplaces as well as tech and data.*” (Bassler, 2019: Annex IV)

4. "***The alignment teams are for the exchange of best practices*** *and the alignment of strategy, harmonization of technology issues or issues related to platforms –* ***less for scouting companies***." (Walder, 2019b: Annex IV)
5. "*I think we are very strategic. We know we need to have a mortgage service on the real estate platform; an insurance service on the card platform; and pay-per-applicant system on the recruiting platform. Then we look for solutions.* ***Sometimes we need to develop them by ourselves and sometimes add-on acquisitions do the job***." (Walder, 2019b: Annex IV)
6. "***Marc is the CEO who made this all happen****. He took many risks but throughout he had the trust of the family. The family feels comfortable that Marc is the right guy. But Robin Lingg and others are equally important in driving the transformation.* **There is no cluster risk at all. Not at all**." (Cisullo, 2019: Annex IV)
7. "*Well you know, I think everything has to do with motivation; with having the right people on the field. I think it is the responsibility of the senior management to motivate all team members and* ***not make them feel like a guest of this journey***." (Cisullo, 2019: Annex IV)
8. "*Now, beyond publishing and digital marketplaces,* ***our challenge is to develop the third leg that can secure future growth. We have not found it. I doubt whether it can come from within the company*** *as it has to be something radically different from what we do today*." (Cisullo, 2019: Annex IV)
9. "*We continue operating in a market environment that is rather discontinuous and keeps challenging entrenched business models. However, looking at our two core business pillars – (1) Media and (2) Marketplaces –* ***I am not convinced that we need massive acquisitions to add a third pillar in order to grow****. On the contrary, personally, I believe that* ***we can double the value of the company by continuing leveraging our strong market positions in Media and Marketplaces****. In both pillars, the opportunities are enormous to build value through adjunct service models. In Marketplaces, for example, we started expanding in financial services related to purchasing or insuring a home or a car. In the traditional media business, we start exploring with promising transaction-centric service models which are likely to transform the traditional publishing's business models and ecosystems.* (Walder, 2020: Annex VIII)
10. "*However****, the Group-wide and bottom-up alignment and empowerment of bottom-up processes that followed after 2015 have been equally important to the sustainability of value creation and firm survival****. It really depends on where you are in the firm's lifecycle. I would tend to agree that eventually, firm survival is critically dependent on the continuous and sustainable interaction of*

top-down and bottom-up processes. We feel well prepared for the 'third-phase' of transformation that we are about to enter." (Walder, 2020: Annex VIII)

Conclusive answers to the three questions raised earlier (pp. 160-161) should open with an interview statement by Steve Case (2020: Annex VIII) in response to the 'Free-Energy Governance' research propositions:

"The various experiences I've had, ranging from starting America Online, to chairing a merged AOL/Time Warner, to backing entrepreneurs via Revolution, or by helping to oversee public institutions like the Smithsonian, lead me to conclude that governance cannot be viewed in a vacuum – what is appropriate really depends on the context in which you're operating. A "one size fits all" approach will likely be flawed. Rather, you need to finetune the governance for the specific circumstance, based on where the organization is in its life cycle, how the team is working and what changes might be needed to position the organization for the future, how the company or organization fits in a broader context (competition, technology, government, and other), what challenges you face and/or opportunities you're seeking to seize, etc. That assessment will likely lead to a sense of how "top down" vs "bottoms up" the governance should be, for the next chapter."

Indeed, the degree to which a governance model emphasizes a top-down or bottom-up approach "*really depends on where you are in the firm's lifecycle*." (Walder, 2020: Annex VIII). As previously stated, **the top-down approach personified by Marc Walder was absolutely essential and critical to firm survival (2008-2015)**. The business focus and operational alignment that was introduced post-2015 was equally critical to 'make sense' of all the "*rather wild, fast, courageous and opportunistic*" transactions (Walder, 2020: Annex VIII).

However, strong operational alignment and opportunity scouting on the operational field level and sharing observations and insights cross-hierarchically via collaboration tools like Slack are not necessarily 'bottom-up' in terms of 'Free-Energy Governance'. Recognition density is defined as top-down/bottom-up message passing and belief propagation that is related in circular causality, i.e. prediction-error-minimization: purpose directed prediction models generating top-down predictions are continuously challenged by bottom-up stimuli and data points in circular causality.

Ringier's second phase of transformation (2015-to date) was certainly more inward oriented and focused on enhancing operational effectiveness in each of the holding's more than 100 participations. Further, as Marc Walder understood that the firm's value, overall market relevance, and long-term survival will be determined by 'Tech & Data' ("*Two years ago, I announced that Ringier needs to become a tech and data driven company*.", Walder, 2019a: Annex IV), 'operational engineering' across all participations gained in importance. However, how 'bottom-up message passing' has fertilized 'top-down belief propagation' in this process and eventually defined the strategic agenda is difficult to assess in the absence of interviews with middle- and field-level management.

The heavy cost of the first and excessively capital-intensive top-down transformation phase (2008-2015) has severely constrained the firm's empowerment of bottom-up stimuli to change Upper Echelon's prediction models. Probably latest since 2016 when Ringier stopped reporting the acquisitions-related depreciating costs in its annual report, the family, Marc Walder, and the board were locked into a triple-focus of: (a) **enhancing the operating entities' profitability** against a background of stronger-than-expected decline in the traditional core business of publishing and rather below-expectations profit growth in the newly acquired digital businesses; (b) **debt-servicing**; and (c) **need for growth finance**.

While top-down/bottom-up cross-fertilization - supported by 'Tech&Data' and 'alignment teams' - was essential for improving operational efficiency, it is hard to resist concluding that debt-servicing and the need for growth finance must have pre-occupied the board for some time. According to the 'Free-Energy Governance' framework, the Mobiliar transaction as announced in February 2020 – appears to be a product of a 'top-down' financial-control agenda rather than 'bottom-up' purpose-oriented strategic renewal.

Indeed, is Ringier protected from another 'Google moment' that "*we have completely missed*" (Walder, 2019a: Annex IV)? The answer is impossible to establish in the absence of interviews with field- and middle-management. However, given the continued dominance of top-down directed strategic leadership it is rather likely that Ringier will be surprised again.

A fair and final question is whether with more than 100 participations across two rather unrelated and distinct business pillars (publishing and marketplaces), Ringier can handle such complexity other than through a strong top-down approach. More importantly, joint-venture governance arrangements may restrict Ringier to autonomously design FEG-inspired governance models. For Ringier to sustain continuous strategic renewal and empower the prospects of firm survival, exit or a partial spin-off of certain activities may be in the waiting to finally create transparent circular causality of top-down prediction models and bottom-up data as a basis for 'shared meaning' and 'shared expectations'.

(b) <u>environmental engagement</u>

Ringier has excelled in execution as a smart and fast follower. Walder's statement can be fully subscribed to: "*I think we are fast and smart followers. I think we are extremely good at execution. We are extremely good at observing and analyzing the market environment*." (Walder, 2019a: Annex IV) "*This is certainly an important core competence. Whether this is enough for the future remains to be seen*." (zu Salm, 2019: Annex IV) "*Role models like Schibsted Media Group and Axel Springer gave us the confidence that our strategic orientation was the right one and helped us proactively identify potential opportunities*." (Bassler, 2019: Annex IV):

However, applying a fast-follower approach – independently of how strong the underlying execution capabilities are –the firm and its leadership must understand when to follow which 'siren call'. Schibsted's and Springer's playbook, respectively, were rather straightforward and obvious in the early years of digitally transforming a traditional publisher. Besides digitalizing journalism, transaction-centric business models inspired by traditional Classifieds (the original cash-cow of most publishing houses, except for Ringier) were to complement advertisement revenues.

But as certain 'playbooks' complete their run, eventually a firm is challenged to reveal and enact the right significance in 'its' very environment. The firm's core purpose is critical. In the absence of such purpose, strategy becomes rather opportunistic and financial control centric. Being purpose-directed is the foundation of noticing, i.e. revealing (enacting) significance in the environment:

Noticing: Where to Look and What to See
The range of what we think and do is limited by what we fail to notice.
And because we fail to notice that we fail to notice
there is little we can do to change
until we notice how failing to notice shapes our thoughts and deeds.
(R. D. Laing, quoted in Goleman, 1985: 24)

Overall, Ringier has not cultivated environmental engagement in form of enactment but has been rather trapped in continual adaptive 'catch-up' or a form of cloning internationally proven models for its core markets. "*In terms of innovation, Ringier is a* *fast follower in a global perspective. In Switzerland, Ringier is more a kind of pioneer*." (Cisullo, 2019: Annex IV)

In the absence of proprietary environmental enactment, Ringier's sustainability for continuous strategic renewal and prospects for survival will be compromised. In a distributed and discontinuous market environment, an adaptation-centric environmental engagement is prone to surprises reinforcing a worldview dominated by uncertainty, eventually compromising the sustainability of strategic renewal and, consequently, firm survival.

Ringier has not been able to deliver radical product innovations creating new growth markets. In the traditional core publishing business, two radical in-house product innovations - 'Schweizer Illustrierte' (people/family photo magazine) in 1911 and 'Blick' (tabloid) in 1959 –must have been enactment-driven and eventually had provided by 2008 the cash to reinvent the business for the next 100 years. Once a firm embraces environmental enactment as a way of environmental engagement, the need for top-down/bottom-up connectivity gains in importance as much as dynamic board capabilities become critical.

(c) <u>dynamic board capabilities (duality management: financial vs. strategic control)</u>

Corporate governance at Ringier has been heavily intermediated by Michael Ringier's preferences and style, as can be reasonably expected from a family-controlling shareholder chairing the board of directors: "*With Michael Ringier, the leadership of the board has been rather consensus driven. We should question the core of our DNA and activities much harder and more critically. But, in the end, the board's strategic role is a matter of ownership structure: private/public or concentrated/distributed*." (Cisullo, 2019: Annex IV)

Overall, it is fair to conclude that Ringier's governance regime has been characteristic of a traditional governance model (see Table 2, p. 125) fostering financial control and embracing the world as a challenge of induced (reactive) co-alignment (i.e., adaptation) rather than autonomous (pro-active) co-creation (enactment). The 'playbook' was Third-Party imposed. Ringier did not create new markets through radical innovation.

"*The board of directors has an advisory and questioning role, on the one hand to challenge the management and on the other hand to offer the family a good basis for decision-making*." (Cisullo, 2019: Annex IV) "*To put a plain vanilla view on the table*

[…] on any given topic and situation … to develop a good basis for decision-making and […] to assess the situation in the most pressing areas." (Cisullo, 2019: Annex IV) "*Indeed, the traditional concept of the board getting together a few times a year, maybe some conference calls in-between, is not working any longer. Certainly not, if the board mandate is to fully assume its strategic responsibility, which is the law in Switzerland*." (Cisullo, 2019: Annex IV) CFO-Bassler stresses how the "*board of directors supported, pushed and challenged the transformation so that all these acquisitions could really be mastered. Furthermore, the network of the board of directors was important. The role of the board of directors has always been very, very good, challenging and supportive*." (Bassler, 2019: Annex IV)

Within the traditional governance logic of challenging, advising, and monitoring, indeed, the board has been supportive and 'successful'. But **from a dynamic board capability perspective, i.e. balancing financial and strategic control (duality management), the Ringier board has failed**. The firm's survival has been put at risk as the company got entrapped in 'financial control' eventually leading to a 'Mobiliar transaction' (ceding 25% ownership to an insurance company as a measure of growth or survival finance).

After more than seven years of capital-intensive M&A-/joint-venture-driven digital transformation (2008-15), Ringier has rather weakened its capacity to exercise strategic control, i.e. in-house led radical innovation creating new (hereto) non-existent growth markets. In fact, one may take the view that the aspirations and competence of CEO-Walder and his team have not found their match in the board of directors' sensemaking (duality management) capability.

There was no shortage of execution excellence in Walder and his team. But the board bought into Walder's strategy of 'external innovation' (M&A and joint-venturing as a namesake for digital transformation) without appreciating that unless counterbalanced by strategic control as a 'first-line innovator' in form of radical in-house innovation, the firm will be left vulnerable to the point of becoming the very prey of corporate control's market. At the end, the core was only marginally transformed. The *comfort zone of financial control* crowded out the *hard path to strategic control*.

***Control Variable**: family control*

Ringier's family-controlling impact on the firm's strategy can be headlined: 'increase the resources available to invest'; 'generously fund a substantive mission'; and 'foster the talent to create those competencies'. (Le Breton-Miller and Miller, 2016: 731)

Indeed, "*the family was behind the M&A-based transformation. There was a high level of support in the area of decision-making. The whole management was completely empowered by the Ringier family, which played such a fabulous, courageous role in this whole transformation process*." (Bassler, 2019: Annex IV)

For the purposes of this study, there are three specific attributes that are relevant and define 'family control' at Ringier:

(1) ***Chairman Michael Ringier is the family's largest shareholder***[218]. While it is emphasized that all important decisions are based on family consensus[219], Michael Ringier's influence on the firm's structure (organizational design), cognition (environmental engagement), and board capabilities (duality management) is significant. More importantly, M. Ringier's control allowed the company to be sheltered from capital markets' short-termism: "*The stock market is partly responsible for destructive pressure, which - from the perspective of a rapidly changing media industry – leads to short-termism. Wrong decisions are the likely consequence. The stock market's short-term pressure for growth eventually can lead to unfavorable constellations in the long term*." (M. Ringier, 2019; Annex IV) But equally, one may argue that more pressure early-on could have been beneficial in the face of *entropic erosion* in the traditional publishing business, challenging the board's sensemaking ability.

(2) ***The family's identity is that of a publisher ('Verleger')***. The deep conviction around the power of publishing is summarized in Michael Ringier's statement (2019, Annex IV): "*Traditional publishing opens doors and is the basis for building networks. This is often underestimated. That is why publishing is a very 'profitable' business model (not necessarily in a financial sense).*

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[218] Michael Ringier's shareholding amounted to 50% until Marc Walder purchased a 10% stake that was sourced pro-rata from each of the three family shareholders; two sisters hold each 25%.

[219] "An acquisition was never made without the consensus of the entire family." (Ringier, 2019: Appendix IV)

But publishing positively supports the other business models."[220] This identity undeniably sets the boundaries of strategic renewal's scope: "*The Ringier family still sees their identity strongly in publishing. This dimension cannot be underestimated in terms of decision-making boundaries*." (zu Salm, 2019: Annex IV)

(3) ***CEO Marc Walder's 'familyness'***. With Marc Walder acquiring a ten percent shareholding, pro-rata sourced from the three respective family-owners, stability at the top - linking family-owners and executive leadership - is cemented. But consequently, the board's 'free-energy governance' role is potentially 'incapacitated' as executive leadership's dominant logics are further empowered to frame 'reality' and set the agenda in the absence of strengthening the board's 'strategic control capacity' counterbalancing 'financial control.'

Without a controlling family-leader such as Michael Ringier as well as Ringier's uncompromising trust in CEO Walder's capabilities, 'digital transformation' would have been impossible to kick-start with such determination and risk-appetite. It was immensely courageous and laid the foundation for survival in the face of accelerating entropic erosion in its core publishing business. It was a race against time that required unbending determination, action, and risk-taking. Marc Walder rose to the challenge and delivered.

The family-control dimension provided an outstanding competitive advantage. "*A family business like Ringier – closely aligned and fast decisions – is a tremendous advantage relative to a listed company. This triangle of myself, the board and the family-shareholders laid the foundation for success. We were able to make decisions fast and often faster than competitors. At times, this was a critical competitive advantage in the M&A market*." (Walder, 2019a: Annex IV)

But eventually, the speediness in decision-making – partly driven by a certain level of rational ignorance – that defined Michael Ringier's competitive advantage during the initial phase of M&A-driven digital transformation, eventually turned into the firm's Achilles' heel.

[220] "Ringier and the board believe that print is outstandingly powerful in building trusted brands and can serve as a competitive edge in digital." (zu Salm, 2019: Annex IV)

As financial pressure and organizational stress increased in the battle for survival (eventually leading to the Mobiliar transaction), it is questionable how much leadership during the research period (2008-15) truly came from the board. The way Michael Ringier refers to the board's composition is rather self-revelatory: "*In the course of the process, new competencies are always being developed in the board of directors. Loyalty, commitment and knowledge are connecting elements. The digitization of our business also required a change in the composition of the board of directors. Today we have new committees and* ***new members, such as bankers****. At Ringier, people have a high priority. In particular,* ***the constellation of the board of directors is designed for people who get along well***." (Michael Ringier, 2019: Annex IV; emphasis by DBK)

In consideration of Table 2 (p. 125) comparing the 'Free-Energy Governance' framework with 'Traditional Corporate Governance' models, it is rather evident that under the Owner-Chairmanship control of Michael Ringier, the board of directors eventually turned into a rather "low-scale, low-leverage legacy business" trapped in the anti-clocked logic that environment is an object to adapt to (usually on the back of CEO-framed information-flow and analysis) and, consequently, breeding a logic and emphasis of financial control at the expense of strategic control, eventually putting firm performance and survival at risk.

The question arises **whether family-ownership turned into a competitive disadvantage** towards the end of the period under consideration (2008-15) in the absence of appointing an independent Chairman. Had the company been publicly listed, financial markets would have most likely started asking discomforting questions concerning the true potential for profitability growth, in particular against the background of an M&A-funding-geared balance sheet. The family-led board lacked the ability to (self-)impose strategic control. Financial control was all that was left: *deal-making*.

Control Variable*: environmental scarcity in form of entropic erosion in traditional print*

The decline in print is defined as an **entropic erosion** and nonetheless was not a challenge in perception (sensing) but one of interpretation (sensemaking). The need for digitalizing journalism and identifying new and more transaction-centric business models was increasingly obvious back in 2007/08 but the 'sense of urgency' had not yet kicked-in. "*But our business was just too good until 2008 to look elsewhere for a profitable future. Certainly, in terms of P&L logic, there was no urgency. In Europe, 2007 was a great year for many media companies. 2008 was a great year. We were* *content-centric but understood to make money in a 'free-content' world, we must become transaction-based. Digital marketplaces were the obvious target model*." (Walder, 2019a: Annex IV)

Entropic erosion in the traditional print segment was inescapably sensed (noticed): "*It was clear that we had to move because we were sitting - to put it dramatically - on a sinking ship*." (Walder, 2019a) Latest by 2012, financial reality imposed a sense of urgency: "*We saw in 2012 that print declined more sharply than we had expected in 2008, for example. In 2012, the sense of urgency was rising*." (Bassler, 2019: Annex IV)

Marc Walder (2019a: Annex IV) bluntly summarizes traditional print media's environmental scarcity as a failure of sensemaking - 'Where to look and what to see?': "*We had no 'data urgency'. We seriously continued thinking that we can sell through context. We have great context and we have millions of people. That's enough for the advertising industry. Whereas the data strategy that Google, Facebook, YouTube, Amazon and others pursued realized that the advertising market doesn't want to have context but profiles. So, Facebook, for example, just said we're going to give you 10 different profiles and you can buy them by the thousands: you want ten thousand women below 25 or - more granular- an urban BMW man. We completely fucked up, and now 80 percent of the digital advertising money is going straight to Google, Facebook, Amazon, and the likes. The media industry hasn't found an answer to that. That's 80 percent of the cake. We are all now focusing on data and data alliances.* ***But it is very challenging to catch up on that front. We need to anticipate the next big wave rather than chasing the 'lost wave'***."

Indeed, *"the entire media industry completely failed to understand Google and Facebook […] Today, Facebook has more than US$50 billion in turnover from advertising*." (Walder, 2019a) *"Data-driven advertising was their [Google and Facebook] weapon. But we have completely missed and then fucked-up the leverage of data."* (Walder, 2019a: Annex IV) "*Ringier is now trying to move from acquisition-driven change to the development of its own ideas*." (Cisullo, 2019: Annex IV) "*Now we have to make sure that we run faster than others. The future will show whether we are capable of doing this*." (Cisullo, 2019: Annex IV)

In summary, entropic erosion and eventually contraction in print was an inevitable reality (sensing, perception). However, sensemaking (interpretation) was rather slow and incremental: international expansion into Eastern & Central Europe as a measure of growth was followed by diversification into entertainment (leveraging the traditional print model) and eventually digital marketplaces, until, finally, Ringier understood that the true challenge of the traditional print advertisement model has not been the internet itself but the 'data-centric profiling' that a 'socially networked-world' empowered. All initiatives were top-down CEO-initiated and -directed either as 'wild guesses' (in entertainment) or 'fast-follower' (with marketplaces).

Environmental scarcity (here in form of entropic erosion) was a critical source of Ringier's drive for strategic renewal. However, significant and predominantly debt-financed capital investments have neither produced 'outsized' profits (i.e., substantially growing beyond compensating print's declining profit contribution) nor a distinctive edge for enacting a 'proprietary' growth path. Has Ringier learnt the right lessons from the confrontation with environmental scarcity? Maybe. But the firm appears to have neither implemented the structure in form of recognition density, nor adopted the cognitive mode, nor developed the board capabilities to 'minimize surprise' in a *scarcity*-prone world. As much as Ringier missed the 'data leverage' pioneered by Google and Facebook, for example, Ringier may likely miss something else right now that will take Ringier eventually by surprise with survival-threatening consequences.

Environmental scarcity, in whatever form and shape, is the reality of distributed and discontinuous market environments. Firm-level sensing and sensemaking are the essential faculties that are required for the firm's 'light-torch' to enlighten the purpose-directed path – generatively enacting 'significance in the environment' as 'shared meaning'. That process is not Upper Echelon's exclusive domain. Strategic renewal must engage the entire organization: top-down and bottom-up - through generative, experimental, and purpose-directed *free-energy-minimization*.

Conclusion

Overall, Ringier did not 'redesign the plane while flying it.' Ringier rather put newly acquired planes into the sky – at best as a 'strategic' holding company – all flying simultaneously with limited synergies to date. Essentially, there was rather little transformation at the core.

Top-down leadership is absolutely essential: "*You need vision to have a sense of where you want/need to go, but you can't get there without strong execution, which ultimately comes down to people – and how they are led, managed and governed.*" (Steve Case, 2020: VIII). Indeed, any leadership approach that is not participatory and hierarchy-connecting is anti-clocked.

"*The 'bottom-up' power is continuously strengthened by different collaboration tools such as Slack. They allow each member to contribute, independently of its hierarchical position. This is essential for the Group and the top-leadership to pick up bottom-up signals through the proximity to resource markets such as clients, products, and technologies*." (Bassler, 2020: Annex VIII) But bottom-up signaling is only as good as a firm's purpose and 'explainable' top-down predictions (and underlying prediction models) are communicated with clarity so that generative sensemaking can be facilitated in circular causality. In the absence of an organizing framework such as FEG that transparently cultivates **circular causality of top-down predictions and bottom-up stimuli** the relevance of bottom-up signaling is rather arbitrary.

Applying the Free Energy Governance lens to the study's research period of 2008-15, Ringier's lack of (1) a **top-down/bottom-up structural foundation**; (2) the ability to **enact environment** rather than to adapt as 'fast-follower'; and (3) essential board capabilities such as **balancing financial and strategic control** are exposed. All three dimensions form the critical basis for a firm to sustainably control its destiny of strategic renewal and ensure firm survival. In that sense, FEG is both (a) a governance framework as well as (b) an early indicator for impending entropy.

According to CEO Walder and CFO Bassler (see Annex VIII) inward-orientated operational consolidation cultivating bottom-up processes followed the study's research period (2008-15). However, the interview statements suggest that Ringier appears to remain equally challenged and at risk today, certainly from a FEG perspective. Surprises resulting from a top-down/bottom-up vacuum are likely to continue compromising the firm's full potential as well as prospects for survival going forward. To date, Ringier has not displayed any distinct enactment of the environment. And for the board to develop dynamic capabilities in form of duality management new board leadership is required.

Indeed, 'The Struggle for Ringier' continues.

3.6.3 Alignment between theory and empirical results

*"For our purposes we use a simple, general definition: theory is a statement of concepts and their interrelationships that shows how and/or why a phenomenon occurs (cf. Gioia & Pitre, 1990). We believe, however, that a more productive question to ask, and for us to address, is "What is a theoretical contribution?" That is, what signifies a significant theoretical (as opposed to an empirical or a methodological) advancement in our understanding of a phenomenon?... Our synthesis reveals two dimensions—**originality** and **utility**—that currently dominate considerations of theoretical contribution."*
(Corley and Gioia, 2011:12-13; emphasis by DBK)

Free-Energy Governance introduces a novel cross-hierarchical generative framework that uniquely applies the 'triplet' of structure, cognition, and capabilities, specifically in the context of continuous strategic renewal in pursuit of firm survival in a distributed and discontinuous world (**originality**). The alignment between theory and empirical results should highlight that this original theoretical contribution is of relevant utility to practice (**utility**).[221]

The framework has been conceptually, in particular, inspired by neuroscience's '**free-energy principle**' (Friston, 2009, 2010), **'sensemaking perspective'** (Weick, 1969, 1995), **attention-based view** (Ocasio, 1997), and **dynamic capabilities view** (Teece et al. 1997; Helfat and Peteraf, 2015; Helfat and Martin, 2015).

The framework's core propositions summarize its ambition for practice-relevant theoretical contribution.

P1- Recognition Density **(Structure)**
The stronger a firm's cross-hierarchical top-down/bottom-up/lateral recognition density between and within governance and operational channels, the stronger the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival (P1.1).

[221] "**Originality** can be categorized as either (1) advancing understanding incrementally or (2) advancing understanding in a way that provides some form of revelation, whereas the **utility** dimension parses into (1) practically useful and (2) scientifically useful." (Corley and Gioia, 2011:15-16; emphasis by DBK)

Recognition density is defined as cross- and intra-hierarchical circular causality of belief propagation (predictions) and message passing (stimuli). Considering the empirical results, it is fair to conclude that the recognition density has been rather weak and therefore the prospects of firm survival are likely to be compromised. Indeed, top-down centrism has created a bottom-up vacuum that is breeding survival-threatening loss of strategic control.

P2- Environmental Enactment **(Cognition)**

The stronger a firm's cognitive orientation towards environmental enactment and innovative abduction, the stronger the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival (P2.1).

Environmental enactment is not about inventing reality but 'revealing significance in the environment' that is specific to a firm's purpose. If purpose is either absent or cannot be translated into *explainable* predictions, environment cannot be enacted. Ringier has been a 'fast-follower' rather than 'first-line innovator'. Ringer's Upper Echelon has not displayed a capability for idiosyncratic enactment. Beyond digital transformation, the firm's purpose appears to be ill-defined. In that regard, the 2020 Mobiliar transaction, though outside of the research period (2008-15), reimposes the question; What is the purpose of Ringier?

P3 - Dynamic Board Capabilities **(Capabilities)**

The stronger the board's DMN-centric duality management of exploitation vs. exploration and financial vs. strategic control, the stronger the sustainability of successful and continuous strategic renewal and, hence, the firm's prospects for survival (P3.1).

Indeed, the board of directors has no executive responsibilities. But in a distributed and discontinuous world where survival is a constant concern, the board has a responsibility to ensure (through the empowerment of executive leadership) that structures, processes, and capabilities are in place to allow 'flying the plane while redesigning the plane'. The board must finally turn towards its own capabilities set, developing dynamic board capabilities: duality management.

Due to the very boundaries of the study and specifically the restricted access to sensemakers, it was impossible to study the firm's capability to vacillate' between exploitation and exploration. Therefore, no alignment between theory and empirical results can be established here.

In terms of duality management of financial and strategic control (capabilities), it is fair to conclude that the alignment of theory and empirical results is strong given the firm's overdependence on financial control. Overall, the Ringier board is stuck in traditional board governance logics (see Table 2; p. 125) and is, therefore, ill-equipped to complement executive leadership in mastering the challenges (structure, cognition, capabilities) of strategic renewal. Consequently, the firm's prospects for survival are potentially compromised.

One relevant question, however, is whether the lack of duality management in terms of financial and strategic control allows to infer that the capability to establish structures, processes and executive capabilities to vacillate in real-time between exploitation and exploration is likely to be non-existent as well.

In summary, the alignment between theory and empirical results appears to be considerable. Can a single case study validate a theoretical framework, in particular, when the dependent variable is the prospect of firm survival, which is firm- and context-specific and overall impossible to prove in the absence of bankruptcy? Indeed, unless the case study is "a talking pig" (Siggelknow, 2007:20) it remains to be judged by the academic community. The theoretical contribution to the field of organizational science - in terms of 'originality and 'utility' - is this dissertation's ultimate ambition.

3.6.4 Implications relating to theory

The power of 'Free-Energy Governance' is its unique linkage of structure (recognition density), cognition (enactment), and capabilities (dynamic board capabilities), providing a framework for a (1) a new logic of organizing centered around surprise-minimization as well as (2) a programmatic approach to predicting corporate entropy.

Free-Energy Governance is not introduced as an incremental improvement of existing theories but as the opening of a new *conversation* (Huff, 1999: 5) laying a novel foundation for strategy research in a distributed and discontinuous world.

Specifically in terms of implications relating to theory, the 'Free-Energy Governance' framework (1) redefines and reinforces the nexus of structure and cognition (Attention-Based View), (2) advances the Dynamic Capabilities View (DCV) from the managerial to the board level in form of duality management

(specifically balancing financial and strategic control), and (3) applies neuroscience's 'free-energy principle' to organizational governance.

Concerning the empirical results' implications relating to 'Free-Energy Governance', the firm's lifecycle needs to be more explicitly considered. The following two interview statements are relevant in this context.

- "*During the first phase of transformation, 2008-2015, the criteria of Free-Energy Governance as described in the propositions of the research study were not fulfilled. But it was this phase that secured the firm's long-term survival. However, the Group-wide and bottom-up alignment and empowerment of bottom-up processes that followed after 2015 have been equally important to the sustainability of value creation and firm survival.* ***It really depends on where you are in the firm's lifecycle*.**" (Walder, 2020: Annex VIII; emphasis by DBK)
- "*The various experiences I've had, ranging from starting America Online, to chairing a merged AOL/Time Warner, to backing entrepreneurs via Revolution, or by helping to oversee public institutions like the Smithsonian, lead me to conclude that governance cannot be viewed in a vacuum –* ***what is appropriate really depends on the context in which you're operating****. A "one size fits all" approach will likely be flawed.*" (Case, 2020: Annex VIII; emphasis by DBK)

Indeed, "one size fits all" is a flawed approach, and "where you are in the firm's lifecycle" is essential. However, to emphasize either a top-down or bottom-up leadership approach as a function of lifecycle and context does presuppose in the first place that a firm has built the foundation to autonomously determine the level of emphasis of top-down or top-down/bottom-up. Maintaining that agility is a strategic imperative in pursuit of firm survival. Otherwise, the firm's strategic options are narrowing, most likely ending up capitulating to the dictate of financial control, condemning the firm to M&A and joint ventures to secure growth and innovation.

Lifecycle and industrial/technology context are critical moderators. "*I would tend to agree that eventually, firm survival is critically dependent on the continuous and sustainable interaction of top-down and bottom-up processes*." (Walder, 2020: Annex VIII)

3.6.5 Implications relating to management practice

"Good theory is practical precisely because it advances knowledge in a scientific discipline, guides research toward crucial questions, and enlightens the profession of management" **(Van de Ven, 1989: 486)**[222]

"Thus, theory directed at practical importance would focus on prescriptions for structuring and organizing around a phenomenon and less on how science can further delineate or understand the phenomenon… Yet the reality is that, excepting some passionate calls for change… practical utility's role in theoretical contribution seems to receive mainly lip service." **(Corley and Gioia, 2011:18)**

The practical relevance of theory to management practice is essentially determined by three dimensions. Theory must: (a) **be intuitive** as well as 'problem- or opportunity-driven' (Corley and Gioia, 2011: 22), (b) **provide empowering metaphors** that enhance the effectiveness of intra-firm communication and engagement, and, more importantly, (c) **inspire Upper Echelon questioning its very 'habits of mind'**, i.e. enrich the perspective around 'doing things differently'.

Theory building is also a product of its time, i.e. "identify domains that will soon be in need of theorizing" (Corley and Gioia, 2011:23). Our (business) times are in particular characterized by three phenomena:

1. accelerating dis-intermediation and decentralization powered by all-pervading connectivity;
2. exponential growth in artificial intelligence (AI) and specifically machine-powered deep learning that is fueled by an equally exponential growth in cheap and distributed computing power capturing and processing more (big) data as a basis for prediction and innovation;
3. leading to distributed and discontinuous market dynamics that not only impose continuous strategic renewal but is a dangerously fertile ground for perceiving environment as uncertain and unpredictable.

On this basis, we need a new approach to organizing that matches the dynamics of a discontinuous and distributed world. To conceive strategic renewal as a continuous and generative process of top-down predictions/bottom-up stimuli error/surprise minimization powered by recognition density is a novel framework, urging Upper

[222] Van de Ven, A. H. 1989. Nothing is quite so practical as a good theory. Academy of Management Review, 14: 486 – 489.

Echelon to understand and consequently redesign processes and incentive structures to empower bottom-up stimuli to challenge top-down predictions. Further, Free-Energy Governance provides rich and new meaning to existing concepts and establishes new relationships: ‘top-down/bottom-up’, for example, is part of day-to-day management language but is redefined in form a unique generative process in pursuit of one objective: **minimize surprise to avoid entropy to survive**.

This is equally true for dynamic board capabilities. To date, corporate governance practice is more concerned with defining its responsibilities rather than addressing its specific capability needs. Board capabilities are not of an operational (executive) nature but must be meta-operational. Dynamic board capabilities establish a new category of capabilities. Sensing and sensemaking, though not novel concepts in strategy management research, will need to be more effectively operationalized beyond their conceptional appeal. Sensing- (pick up the right/possibly transient/nonetheless transformation-bearing signals early on) and sensemaking (uniquely interpret obvious signals and recombine resources accordingly) are constituent parts of duality management, specifically balancing financial and strategic control.

The concepts of financial and strategic control have been defined in multiple ways, in both corporate governance and management literature. Hitt et al.’s definition (1996) of ‘external’ and ‘internal’ innovation and the survival-threatening implications resulting from overdependence on financial control, however, provide Upper Echelon with a new early-warning dimension for corporate entropy. More importantly, it establishes a strategic imperative: *do not ever allow for financial control to take over*.

Adaptive capacity (or ‘adaptive fitness’) are concepts that have defined both management science as well as practice since the birth of the ‘modern corporation’. ‘*Analyze the environment and adapt*’ has been the fit-all-prescription ever since. ‘Fast and smart following’ has been prominently promoted as a viable high-return strategy. However, in environments that are increasingly distributed and discontinuous, adaptation is a rather futile approach to creating competitive advantage.

‘Enactment’, coined by Karl Weick (1977) and astutely applied first by Smirchich and Stubbart (1984) to strategy process, provides a new foundation for mastering what is commonly perceived as an unpredictable world. Enactment is a form of ‘purpose-directed revealing of significance in the environment’. Once we embrace environmental engagement as such, it is too obvious what a non-sense the idea of an objective reality is, as much as uncertainty is not objective but a subjective experience. Enactment in terms of generatively ‘legislating’ a firm’s operating and competitive landscape is liberating Upper Echelon from the overpowering belief that their biggest challenge is *taming* uncertainty instead of *surfing* it.

How to make it all work is a daunting task. This dissertation falls short of providing a best-practice-catalogue. First of all, any new logic is also a matter of a new culture and mindset, apart from the need to develop new capabilities: *How can one possibly redefine the board's strategic 'meta-role' when traditional governance modes are so ubiquitous and cognitive capabilities so poorly developed or non-manifest?*

Throughout the study process it transpired that practitioners definitely have strategic goals, variably emphasizing financial or strategic control dimension. But often they lack clarity around the firm's purpose. 'Why should this business exist in the first place?' is an important question too rarely asked. Survival is a matter of staying-relevant.

In this context, Jan Ståhlberg, one of the early architects building EQT into a EUR40bn-plus leading PE investor, makes a pertinent statement relating to PE's public market equivalent peer-outperformance: "*Indeed, private equity should outperform public companies for a number of reasons: First, PE has more strategic freedom. We constantly question the status quo. Public boards are dedicated to what they have. They rarely question the existing business*." (Ståhlberg, 2020: Annex VIII) Indeed, **questioning the very right to existence of a business is a good starting point to distill and re-interpret its purpose**.

A purpose-directed firm is the foundation for Free-Energy Governance to come to live. Steve Jobs, for example, had a purpose-directed product vision. The product vision was a matter of innovative abduction, but the product realization is a function of continuous and generative prediction-error minimization that engages not only the firm (top-down/bottom-up) but its ecosystems too. 'Purpose' is the axiom of strategic prediction models (worldviews; long-term target models). Predictions could be 'wild guesses'; and this is most likely how some of the most transformative inventions and innovations have 'kicked-off' in someone's mind (and not necessarily at the top).

On this basis, Upper Echelon needs to define and distinguish between three concepts: (a) purpose, (b) prediction model, and (c) predictions. All three concepts must be articulated and communicated in simple and understandable language. More importantly, once the purpose is clear and accepted, firm-members are empowered to challenge predictions and eventually the underlying prediction-models.

Free-Energy Governance implies a cultural change fostering cross-hierarchical generative sensemaking. Human nature is innately social and participatory. The fact that lower levels of the organization tend to be rather introverted, risk-averse, and too often overly concerned with job security and, therefore, are likely to resist airing ideas and sharing market signals that contradict prevalent predictions and prediction models, should be seen as an organizational 'warning sign'. In fact, the more risk-averse and 'sharing-resistant' the firm's field (i.e. bottom), the more likely that the firm is too top-down directed and eventually will have no other choice but to turn to financial control with potentially survival-threatening consequences.

Purpose-directed, generative, and participatory leadership is what Free-Energy Governance is about. The fact that certain environments (environmental scarcity) require more top-down sensemaking rather than bottom-up sensing is consistent with Free-Energy Governance.

All three concepts (purpose, prediction models, predictions) are on a spectrum of time-horizon. 'Purpose' should be timeless. It should never have to change. Firms and institutions with the longest lifespan were most likely founded on the basis of a timeless purpose. For example, US-based Smithsonian Institution, the world's largest museum, education, and research complex, was founded in 1846 as "an establishment for the increase and diffusion of knowledge"[223]. Nonetheless, the Smithsonian was not a pioneer of the digital diffusion of knowledge, but Wikipedia was. Purpose should be timeless but must be continuously reinterpreted in the context of its time.

Fostering a culture of 'wild guesses' (predictions) in form of innovative abduction to be challenged across all hierarchical levels is an essential 'free-energy' foundation for performance and survival. If prediction error is too consistently too significant, the model generating those 'erroneous' predictions will 'naturally' have to change.

Finally, Upper Echelon is invited to conceive organizing as a matter of linking purpose, prediction models, and predictions with the understanding that firm survival is a matter of purpose-directed, continuous and generative 'surprise-minimization' in form of a circular causality linking top-down predictions and bottom-stimuli. On this basis, 'Free-Energy Governance' should be embraced as (a) intuitive, (b) powerful as a practice-oriented framework giving new meaning to existing metaphors facilitating intra-firm communication and engagement, and (c) a new (soft) logic of organizing matching the

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[223] https://www.si.edu/about; copied on February 15, 2020

demands of a distributed and discontinuous world. The consequential demands for organizational design, a firm's environmental engagement as well as board capabilities are significant. **Hard structures, fossilizing prediction models beyond bottom-up challenge, are a survival-threatening relic of the past.**

'Wild guesses' combined with action-centric experimentation in the real world is superior to any form of Upper Echelon 'strategizing behind closed doors'. "Perception and action are thus locked in a kind of endless circular embrace" (Clark, 2016: 7), powered by top-down/bottom-up generative sensing and sensemaking (**structure/capabilities**), linked by 'systems of interpretation' ('enacted' prediction models; **cognition**), and moderated by ownership structures and environmental scarcity (**context**).

On this latter point, Jan Ståhlberg's practice-relevant statements (Annex VIII; emphasis by DBK) should conclude FEG's implications relating to management practice:

- "*We operated on the basis that 'everyone should know'. Everyone is informed in real-time about everything. Indeed, this may lead to an overload of information, but overall this is still preferable than top-down filtering that may risk excluding potentially insightful stimuli and feedback. How did we manage this:* ***we allowed everyone in the firm to listen into the investment calls, for example. It was a brilliant move. While other PE firms cultivated 'closed doors', we embraced such openness as a major learning platform****, training young professionals to understand our sense of urgency, paranoia, long-term focus and, not least, our principles. More importantly, we often benefited from insights we would have not accessed otherwise. Our organizational structure has never been cascaded. And, I believe, looking at some of the core propositions of Free-Energy Governance,* ***this is Free-Energy Governance****: connecting top and bottom in circular causality of sensemaking with the least friction and optimal response time*."
- "*Overall, I think as long* ***as people are open-minded, the composition of the board is not the problem. Communication is everything****. Value creation, in my experience, has been usually determined by a combination of the following governance imperatives: First, you must start with a clear purpose and long-term goal. Prepare to invest for the long-term, and into structure. Second, you need to continuously question yourself. Paranoia is key. Third, team-decisions are critical. Create a culture that empowers and encourages people to contribute, to take decisions, and not to be risk-averse. Team-decisions are an optimal way to get the best out of everyone. Fourth, the organization must be*

open and transparent; no room for politics. When I was running the global Mid-Market operations out of New York, I was known for ***'walking around'****, watering plants and putting my coffee cup in the dishwasher.* ***You cannot expect bottom-up stimuli reaching the top when the top is not reaching out to the bottom. And sometimes a simple walk through the office can make all the difference****. Listen humble and with respect. In summary, it really comes down to three things:* ***communication, transparency, and respect****.*"

3.6.6 Relevance to answering the research question

WHAT (a) cross-hierarchical framework coupling governance and operational channels in form of recognition density, (b) firm-level environmental engagement, and (c) dynamic board capabilities are essential for the sustainability of successful continuous strategic renewal and, hence, the firm's prospects for survival?

Settling upon the research question has been one of the most challenging parts of this dissertation. Eventually, the empirical study and the research question do dynamically cross-fertilize.

Abduction laid the foundation for this research project. The starting point was the belief that prevalent governance models are no match for a distributed and discontinuous world where a firm's sustainability of continuous strategic renewal increasingly determines firm survival. The objective was to move beyond predominant logics that shape entrenched governance modes and embrace *corporate* governance more as *organizational* governance. The application of Friston's 'free-energy principle' to strategy process was a form of abduction. It was neither deductive nor inductive.

Therefore, formulating the research question was challenging. Alternatively, one could have fixed the question as follows: *Is the absence of a Free-Energy Governance mode indicative of a firm's survival to be potentially at risk?* Overall, however, it is fair to conclude that the original research question is not only appropriate, but the empirical study has been relevant to addressing each one of its core dimensions: structure, cognition, and capabilities.

4 Conclusions

*"I tend to agree with many of the propositions of the Free-Energy Governance framework. Most importantly, I believe **there is a need to take a fresh look at governance models**, in light of the many challenges and opportunities of our times."*
Steve Case, 2020 (Annex VIII: Engaged Scholarship; emphasis by DBK)

4.1 Recommendations for action

The research communities in strategy management and corporate governance, respectively, and practitioners alike are challenged to exit dominant logics in order to truly embrace the world as distributed and discontinuous. In practice, continuous renewal is strategy's categorical imperative, consisting of: (1) redefined coupling of governance and operational channels (top-down/bottom-up surprise-minimization); (2) enactment-centric environmental engagement as opposed to adaptation; and (3) dynamic board capabilities such as duality management balancing strategic and financial control.

Traditional corporate governance models (TCG; see Table 2: p. 125) are likely to continue compromising the full performance potential of executive leadership, relegate the board of directors to strategic irrelevance, reinforce financial control at the expense of strategic control, prioritize (pattern-recognition fueled) content over process, and inhibit the full growth potential of firms as learning-systems. In summary, **the very causes supporting Siebel's statement that we "are in the midst of an evolutionary punctuation: […] witnessing a mass extinction in the corporate world" (Siebel, 2019: 8) are neither a challenge of technology nor a shock-prone environment, but the very unsuitability of our governance models to translate free-energy-principle based machine-learning logics into organizing.**

Today, CEOs are under *entropy-bound* pressure. Firm survival takes center-stage. Boards are in danger, notwithstanding individual members' best intentions and outstanding (though, too often rather domain-centric and past-experience-trapped) capabilities, to be survival-inhibiting: not because they are incompetent, ignorant, or victims of debilitating group dynamics and cognitive 'blind spots'. The challenge is that neither researchers nor practitioners have appreciated that today **a firm's need for continuous strategic renewal requires a 'wholesale governance reinvention'**.

Predominant 'best practices' governance guidelines and directives of the world's leading capital markets jurisdictions, which particularly apply to listed companies – but have nonetheless and equally framed the governance of privately-owned companies – must be re-written to suit the needs of a distributed and discontinuous world. Private-Equity sponsored governance approaches[224] have moved into a diametrically opposite direction relative to public market governance models and have outperformed public market equivalent peers consistently for the past twenty years and will most likely continue to do so.[225]

"*Indeed, private equity should outperform public companies for a number of reasons: **First**, PE has more strategic freedom. We constantly question the status quo. Public boards are dedicated to what they have. They rarely question the existing business. **Second**, we neutralize any potential conflicts of interest and build alignment of interests so that the collective power of all involved can be optimally leveraged for a long-term goal. **Third**, optimal capital allocation is a key value-driver. Public companies have more difficulty in convincing markets to over-capitalize for future growth opportunities. **Fourth**, at least at EQT, a paranoia-powered sense of urgency has always been part of our DNA*." (Ståhlberg, 2020: Annex VIII)[226]

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224 "**Private equity is best understood not as a financing method but as a governance structure**, one that emphasizes strong performance incentives, rules over discretion, and a strong alignment between ownership and management." (Klein et al., 2013: 39; emphasis by DBK)

225 "According to Harris et al. (2014), **top quartile buyout fund outperformance relative to the S&P 500 has consistently averaged at least 20-27% over a fund's life and more than 3% annually**. This conclusion is relatively insensitive to assumptions about benchmark indices and systematic risk (Harris et al., 2014). Against this established and now generally accepted track-record of top-quartile PE outperformance (Acharya et al., 2013), three fundamental questions arise: (1) what factors essentially explain PE performance? (2) **is the PE model prepared for future challenges in an increasingly dynamic business world**? and (3) what is the relevance to public companies?" (Khezri, D.B. 2015. Private Equity PME-Outperformance -a matter of governance: new corporate governance - dynamic capabilities at board level. PhD Seminar Paper (Prof. Dr. Andreas Grüner), November 10, 2015: University of St. Gallen; emphasis by DBK)

226 "Building on the "judgment-based" view of entrepreneurship, we note that **managers of privately held firms, as owners, exercise a strong degree of entrepreneurial judgment over the use of assets, unlike salaried executives of publicly held companies**." (Klein et al., 2013: 39; emphasis by DBK); see also: Finkel, R., & Greising, D. 2010. **The Masters of Private Equity and Venture Capital: Management Lessons from the Pioneers of Private Investing.** New York: McGraw Hill

If the public at large is to participate in the 'innovation economy'[227], we must fundamentally revise public market governance regulations. Governance may not be the root cause of the '**eclipse of the public corporation**' as Michael Jensen labelled the phenomenon already in a 1989 Harvard Business Review article[228]. But unless we advance governance models that match the challenges of a distributed and discontinuous world, overall trust in the governance of the public company and its performance potential will fade. **Rules-based reinforcement logics are entropy-bound in a distributed and discontinuous world.**

The continuous nature of strategic renewal makes 'strategy' an integral and real-time facet of traditional monitoring, advisory, and boundary-spanning board responsibilities. Effectively, in the absence of board-level sensing and sensemaking capabilities, as developed in this dissertation, the board can no longer fulfill even its most basic and traditional responsibilities. Consequently, firm survival is likely to be at risk.

This dissertation is the first ever attempt to introduce the free-energy principle as a basis for assessing 'corporate entropy' and establish a systematic approach to strategic renewal built upon the triplet of structure, cognition, and capabilities. What key recommendation for action remains to be made beyond what has been advocated throughout this work? As much as the empowerment of bottom-stimuli is integral to Free-Energy Governance, change must be enacted from the top and challenged from the bottom.

Management research and business school curricula must more prominently embrace governance challenges as an integral part of strategy process and innovation management, for example. Treating corporate governance as a distinct discipline is anti-clocked.

The boundaries of the firm are increasingly fluid. Therefore, our understanding of the firm must be more 'ecological'. An ecosystems-inspired rather than corporate-centric approach to strategy is indispensable. That requires openness to a vast array of sources for stimuli that must be revealed and assessed for purpose-directed significance to be then related to top-down predictions. More importantly, governance is always

[227] Steve Case elevated this to the level of a public policy concern. See Steve Case: A Weeklong Series: 10 Tech Trends From the Decade That Was … and What Will Be (Revolution, January 6, 2020); https://blog.revolution.com/a-weeklong-series-10-tech-trends-from-the-decade-that-was-and-what-will-be-258b6c9afa68 (copied on February 14, 2020)

multidisciplinary in nature. How can we study business model innovation without due consideration to governance frameworks, for example?

Leadership's ability to avoid being trapped in 'dominant logics' (or 'habits of mind') and to openly and abductively encourage and embrace purpose-directed bottom-up stimuli and engage the organization cross-hierarchically in goal-directed hypotheses-testing is the essence of sensing and sensemaking as the foundation for firm performance and survival.

As early as 1976, Hedberg, Nystrom and Starbuck (1976)[229] addressed the need for the '**self-designing organization**' to match an increasingly dynamic world. Their work is a straightforward summary of 'FEG-inspired' recommendations for action:

"*Designers who erect an organizational palace had better anticipate problems caused by shifting subsoils. […] pursuing stability and avoiding uncertainty interfere with an organization's […] survival."* (p. 44) "*Residents of changing environments need a tent. […] an organizational tent neither asks for harmony between the activities of different organizational components, nor asks that today's behavior resemble yesterday's or tomorrow's."* (p.44) "*Those who live in an organizational tent […] invent sensors for alerting themselves to significant events, and ceaselessly question their present assumptions and habits (Landau, 1973). They remain ready to replace old methods, and they discard even adequate old methods in order to try new ones, looking upon each development as an experiment that suggests new experiments. […] They regard their organization as a means, not an end (White, 1969). They avoid anchoring their satisfactions in the roles and procedures."* (p.45) "[*They] draw satisfactions from the skills and relationships that contribute to processes - the processes generating the organization to come."* (p.46) "*The desired balance can be caricatured with six aphorisms: (1)* ***cooperation requires minimal consensus****; (2)* ***satisfaction rests upon minimal contentment****; (3)* ***wealth arises from minimal affluence****; (4)* ***goals merit minimal faith****; (5)* ***improvement depends on minimal consistency****; and (6)* ***wisdom demands minimal rationality***." (p. 41; emphasis by DBK))

We need a new conversation linking strategy process and corporate governance, which should be headlined: **'Introducing the free-energy principle to management science'**.

[229] Hedberg, B.L.T., Nystrom, P.C., Starbuck, W.H. 1976. **Camping on seesaws: prescriptions for a self-designing organization**. Administrative Science Quarterly, 21: 41–65

4.2 Directions for future research

'Free-Energy Governance' is the opening chapter of a new logic of organizing. The reach, nature, and cross-fertilization of strategy process and corporate governance research, respectively, are redefined and both fields are partly conjoined through a neuroscience inspired framework where firm survival rather than firm performance is the ultimate concern in a discontinuous and distributed world.

Free-Energy Governance is not a substitute for agency or stewardship theories, or any combination thereof. Epistemologically, Free-Energy Governance is rooted in strategic cognition research and aspires to be a fundamentally new logic of organizing linking structure, cognition, and capabilities.

This work is a contribution in 'ideation' and is meant to lay the foundation for future research. Free-Energy Governance is the product of a multidisciplinary research project, connecting the dots amongst strategy, governance, and neuroscience research.

Shortcomings in existing strategy and governance research, respectively, that have inspired this dissertation in the first place have been extensively discussed in the respective sections. Therefore, no further elaboration is undertaken here. In terms of future research, the following five areas are worth considering for advancing Free-Energy Governance (FEG):

(1) *Communications*: the effectiveness of FEG is critically determined by effective communication, specifically around the clarity of corporate purpose, prediction models, and predictions in order to engage and "motivate all team members and not make them feel like a guest of this journey" (Cisullo, 2019: Annex IV) and "to obtain the most possible human energy for productive effort." (Argyris, 1995: 11-12). Communication theories should fertilize FEG-related (practice-oriented) research. Indeed, "there is no organization nor any ideology other than that which emerges in communication. **If organization is emergent in communication, as we believe, then it is not a *being*, but a *becoming*. What we ought to be studying is not organization or ideology, because neither has any ontological status independent of communication, but the processes of**

communication by which we continue to construct both to become the world we live in." (Taylor and Van Every, 2000: x; emphasis by DBK) [230]

(2) *Board capabilities developmental paths* will need to be studied. There is a rich literature on capabilities development paths in strategy research and beyond.[231] However, developmental paths for strategy-process related board capabilities, specifically, has never been focused upon. Being a board member is not just about 'sharing wisdom, expertise, and networks' developed in previous and other career paths but must be embraced as a new commitment to learning as well as un-learning, i.e. embracing capabilities' developmental paths, which are likely and increasingly of a cognitive nature. A less research-oriented and more common sense- and experience-centric but equally insightful perspective is provided by Wurtzel (2012: 336) in his capacity as former CEO and board member of a leading US company that eventually filed for bankruptcy. [232]

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[230] See O'Malley, A.L., Ritchie, S.A., Lord, R.G, Gregory, J.B. and Young, C. M. 2009. **Incorporating Embodied Cognition into Sensemaking Theory: A Theoretical Examination of Embodied Processes in a Leadership Context**. in Rahim, A. et al. (Eds.). Current Topics in Management. Center for Advanced Studies in Management, 14: 151-181: "Explanations of sensemaking are largely guided by amodal symbolic constructs, as evidenced by heavy emphasis on concepts such as scripts, schemas, and organizational vocabularies (e.g., Gioia & Poole, 1984; Harris, 1994; Weick, 1995). Maitlis and Lawrence (2007) defined sensegiving as "an interpretive process in which actors influence each other through persuasive or evocative language" (p. 57). This definition is typical in its **reliance on language and communication in the attainment of organized interpretations** (Daft & Weick, 1984; Weick, 1979; Weick, 1995). Framing events by labeling them as threats ("losses") or opportunities ("gains") is a commonly acknowledged way by which leaders manage meaning (e.g., Jackson & Dutton, 1988), but we contend that **this focus on verbal processes to the exclusion of embodied processes does not sufficiently encompass the scope of sensegiving**. Indeed, Lakoff (2008) notes that there is no disembodied abstract meaning for perceptions and actions; rather, "it is the brain connected to the body functioning in the physical and social world that gives meaning and grounds real reason" (p. 233)." (p. 160-161; emphasis by DBK)

[231] Within 'Boundaries' in Part 1 capabilities developmental paths have been already addressed.
Gavetti's (2005) contribution to linking hierarchy, cognition and capabilities' development is worth considering in this context. Further, **Hodgkinson and Healy** (2011: 1500) "demonstrate how the fundamental capabilities of sensing, seizing, and transforming each require firms to harness the cognitive and emotional capacities of individuals and groups to blend effortful forms of analysis with the skilled utilization of less deliberative, intuitive processes." **Laamanen, T. and Wallin**, J. 2009. Cognitive Dynamics of Capability Development Paths. Journal of Management Studies, 46: 950-981. Laamanen and Wallin "find that the effects of managerial cognition can be detected at three distinct levels of capability development. At the level of operational capabilities, instrumental cognition affects the way in which capabilities are developed. At the level of a firm's capability portfolio, shifts in management's attention regarding capability development cause different evolutionary paths to emerge. Finally, at the extended enterprise level, managerial foresight influences the way in which a firm's capability constellation morphs over time." (950) "In a similar manner to that in which organizational learning research distinguishes between **single-loop and double-loop learning** (Argyris and Schön, 1978), capability research also distinguishes between **operational capabilities and dynamic capabilities**." (Laamanen and Wallin, 2011: 953; emphasis by DBK)

[232] "The Habits of Mind that I have identified fall into several categories. A few are personality traits: **Curiosity** and **Humility**, for example, are typically inborn…**Boldness** and the willingness to **Chase the Impossible Dream** are also personality traits that are more often native to the individual than learned.

Indeed, the study of developmental paths of board capabilities must reach out to the experiences and insights that Wurtzel distills as meta-capabilities.

(3) *Context-specificity*: FEG's core propositions should be tested in view of context-specificity (lifecycle, industry, ownership structure, nature of environmental scarcity, and governance jurisdiction). Indeed, there is a time in a firm's lifecycle to rather emphasize a top-down leadership approach, adapt to the environment as fast-follower, and 'bet' on financial control, for example. FEG provides a potent framework to undertake research to address these questions and enlighten the practice of management.

(4) *Beyond the firm level*: research around group-/team-/family dynamics on a hierarchically lateral level and their impact on FEG-effectiveness (in form of recognition density) is essential to provide management practice with relevant insights to practical FEG-implementation. Past research integrating top, bottom, and lateral levels must be extended with a FEG perspective.[233]

(5) *Sensemaking is grounded in identity construction[234]*: in a FEG-anchored learning system, free-energy minimization should effectively neutralize the distortions of the individual's shortcomings. Studying leadership in the context of FEG should focus on the understanding that "identities are constituted out of the process of interaction. To shift among interactions is to shift among definitions of self. Thus, the sensemaker is himself or herself an ongoing puzzle undergoing continual redefinition, coincident with presenting some self to others and trying to decide which self is appropriate. […] **Once I know who I am then I know what is out there**." (Weick, 1995: 20; emphasis by DBK) 'Self-concept' as "an agent of its own creation" (Weick, 1995: 20) potentially opens a fascinating field of research in the context of FEG: A firm's strategic leadership orientation towards a top-down centric and financial control-oriented fast-follower approach could possibly be indicative of the individual's but collectively self-feeding identity-struggle within Upper Echelon. Effectively, the question arises

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Other Habits of Mind are learned at an early age in the family or in school. They include being willing to **Confront the Brutal Facts** and being able to understand and believe that **Evidence Trumps Ideology**. Both are based on intellectual honesty, a quality one acquires early in life. **Creating a Road Map**, **Passing the Torch with Care**, and **Keeping it Simple and Accountable** are learned skills for making one's way in the world that can, after a while, become habits. Finally, there are traits that fall between native and learned. For example, **Encouraging Debate** is something one can learn… **Focusing on the Future** requires one to tolerate short-term adversity and criticism in the service of long-term success. It requires a level of self-confidence that is generally learned early in life. **Dreaming an Impossible Dream** requires both **Boldness** and comfort with ambiguity…The bottom line is that Habits of Mind, like leadership, are sometimes 'inborn' but can also be mastered and further developed through understanding and hard work. Understanding one's weaknesses in any of these areas is the beginning of wisdom and the key to self-improvement."

233 See Orgland (1997)

234 Weick (1995: 18-24)

> whether cognition (in terms of enacting environmental significance) or dynamic board capabilities (such as duality management), for example, are constrained by leadership's needs for constructing self-identity.[235]

An important question that should inspire the direction of future empirical research is: Is the absence of Free-Energy Governance (structure, cognition, capabilities), a predictor of **a firm's entropy**? [236]

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[235] Weick (1995: 20; quoting Erez, M. and Earley, P.C. 1993. Culture, self-identity, and work. New York: Oxford University Press, p. 28; emphasis by DBK): "The processes that develop and maintain a person's changing sense of self are posited to operate in the service of three self-derived needs: (1) **the need for self-enhancement**, as reflected in seeking and maintaining a positive cognitive and affective state about the self; (2) **the self-efficacy motive**, which is the desire to perceive oneself as competent and efficacious; and (3) **the need for self-consistency**, which is the desire to sense and experience coherence and continuity."

[236] "Might it be possible to detect decline early and reverse course, or even better, might we be able to practice **preventive medicine**? I began to think of decline as analogous to a disease, perhaps like cancer, that can grow on the inside while you still look strong and healthy on the outside." (Collins, 2009: 3; emphasis by DBK) "Yet our research indicates that **organizational decline is largely self-inflicted, and recovery largely within our control**." (Collins, 2009: 25; emphasis by DBK)

4.3 Limitations

The more ambitious a dissertation, the more likely and significant are its very limitations. Within each chapter, specific limitations have been addressed and are not further elaborated here. However, the following qualifications deserve further consideration:

1. This dissertation's ambition is possibly too big. As a consequence, it risks neither advancing any of the addressed challenges nor can it lay a meaningful basis for future research in any of the respective disciplines.
2. A single case study is too narrow to allow for any meaningful generalizability, in particular in the absence of analyzing in detail other companies that may have successfully approximated a Free-Energy Governance framework.
3. In fact, the dependent variable is impossible to prove unless a firm has 'ceased' to exist. However, 'to stay in the game' cannot be an end in its own right. After 12 years and at least CHF1.8bn worth of M&A related investments, Ringier's real profit growth remains weak. Effectively, we need a more elaborate definition of what survival really means. "No company lasts forever. Ultimately, the endgame for any business enterprise is to merge or to be liquidated. Every board, like any poker player, needs to think about when to hold and when to fold its cards." (Wurtzel, 2012: 319) It is in this context that the balance between financial and strategic control becomes particularly pertinent. For example: is the 'Mobiliar transaction' solely a 'financial life vest' wrapped in the mantle of strategic 'story-telling' or does it go beyond averting '*capitulation to irrelevance or death*' (Collins, 2009: 20) and powers Ringier into a new future? Indeed, a longitudinal study is most certainly a more appropriate empirical approach to the study of firm survival.
4. The various theories, frameworks and views that Free-Energy Governance has been inspired by and built upon are possibly too wide-ranging to avoid inner contradictions.
5. Not least, the study falls short of providing concrete practical guidelines for the implementation of Free-Energy Governance.

In summary, this dissertation's "credibility, dependability and transferability"[237] are to be challenged.

[237] Graneheim, U. H. and Lundman, B. 2004. **Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness.** Nurse Education Today, 2:105-112.

4.4 Final conclusion and critical assessment

"A paper should allow a reader to see the world, and not just the literature, in a new way. An acid test would be the following: Imagine that someone who is interested and knowledgeable about the phenomenon you study, but who does not know the literature, were to read your paper. Would this reader find your paper and its results interesting? Or are the paper's contributions only of interest to those who can appreciate the references and refinements to prior theory? If theory talks only to theory, the collective research exercise runs the danger of becoming entirely self-referential and out-of-touch with reality, of coming to be considered irrelevant." (Siggelknow, 2007: 23)

Indeed, the ambition of this dissertation is to engage the research communities of multiple disciplines that have demonstrated interest in and knowledge about the studied phenomenon without requiring to "appreciate references and refinements to prior theory". Free-Energy Governance' provides a unitary and integrative framework linking structure (hierarchy), cognition, and capabilities. The framework is multidisciplinary, integrating strategy process, corporate governance and cognitive neuroscience research.

In a world that is increasingly discontinuous and distributed, sudden environmental scarcity is more frequent. The lifespan of prediction models, analogically to that of companies, has been and will continue to be drastically shortened. This is equally true for any strategic plan.[238] The value of planning is a function of the organizational process that generates the plan's underlying assumptions. Planning is not a one-off exercise to be revisited at quarterly reviews, for example, but must be a continuously generative sensing-sensemaking process engaging cross-hierarchically the entire organization.

Upper Echelon will need to cease the ill-fated pursuit of dominating ownership of 'strategy content'. Content follows process. Therefore, Upper Echelon has one strategic imperative: **focus on reducing organizational friction (top-down/bottom-up/lateral) so that a firm's purpose, its top-down prediction models (worldview) and predictions can form a unity of circular causality with bottom-up stimuli,** pursuing one simple objective: prediction-error-/surprise-minimization. Decision-makers'

[238] Scenario planning is far more important than institutionalizing a plan. In fact, scenario planning should be on every board agenda and every meeting. It is a form of training sensemaking capabilities.

predictions must be ‘tangible’ (i.e. ‘explainable’) for continuous bottom-up challenge. Any absence thereof is an early indicator for firm survival to be eventually at risk.

This dissertation’s core underlying thesis is that in a ‘distributed world’, a cognitive lens may not only provide the more pertinent insights but that the board of directors represents a unique cognitive variable in terms of ensuring (1) strong recognition density through cognitive coupling of governance and operational channels; (2) a firm’s cognitive orientation towards environmental enactment rather than adaptation; and (3) a sustainable balance between strategic and financial control, avoiding the entrapment of overdependence on financial control. **Changing the logic of *organizing* cannot be left to and implemented by senior executive leadership alone, but the board of directors must assume leadership and partly ownership.**

Overall, this dissertation’s critical assessment is reflected in the limitations that have been identified and discussed in each of the respective chapters. However, the most critical assessment is related to the concept of ‘strategy’[239]. Does ‘strategy’ in terms of its traditional meaning in form of a top-down ‘plan of action’ and ‘art of planning’ have still meaning in a fast-paced, distributed and discontinuous world?

“Rationality seems better understood as a postdecision rather than a predecision occurrence. Rationality makes sense of what has been, not of what will be. It is a process of justification in which past deeds are made to appear sensible to the actor himself [herself] and to those other persons to whom he [she] feels accountable.”

(Weick, 1969: 38)

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[239] “**Strategy** (from Greek στρατηγία stratēgia, "art of troop leader; office of general, command, generalship") is a high level plan to achieve one or more goals under conditions of uncertainty. In the sense of the "art of the general", which included several subsets of skills including tactics, siegecraft, logistics etc., the term came into use in the 6th century C.E. in East Roman terminology, and was translated into Western vernacular languages only in the 18th century. From then until the 20th century, the word "strategy" came to denote "a comprehensive way to try to pursue political ends, including the threat or actual use of force, in a dialectic of wills" in a military conflict, in which both adversaries interact.[…]
Henry Mintzberg from McGill University defined strategy as a pattern in a stream of decisions to contrast with a view of strategy as planning, while Henrik von Scheel defines the essence of strategy as the activities to deliver a unique mix of value – choosing to perform activities differently or to perform different activities than rivals. while Max McKeown (2011) argues that "strategy is about shaping the future" and is the human attempt to get to "desirable ends with available means". Dr. Vladimir Kvint defines strategy as "a system of finding, formulating, and developing a doctrine that will ensure long-term success if followed faithfully." Complexity theorists define strategy as the unfolding of the internal and external aspects of the organization that results in actions in a socio-economic context.” (copied from Wikipedia on February 16, 2020: https://en.wikipedia.org/wiki/Strategy)

Indeed, we retrospectively make sense of what has happened and then label it 'strategy'. Listening to the practitioners that expressed their views as part of this dissertation's empirical study (see Annex IV and VIII), it is evident that purpose, principles, and clearly defined long-term target models are essential, but strategic plans have lost their practical relevance, certainly in terms of 'shelf-life'.

As much as 'human judgement' is revalued in a machine-learning and data-driven environment, 'purpose' rather than strategy is what really matters.[240]

"What managers need, however, is a fundamental change in doctrine […]
First, […] place less emphasis on following a clear strategic plan than on building a rich, engaging corporate purpose. Next, […] focus less on formal structural design and more on effective management processes. Finally, [be] less concerned with controlling employees' behavior than with developing their capabilities and broadening their perspectives. In sum, [move] beyond the old doctrine of strategy, structure, and systems to a softer, more organic model built on the development of purpose, process, and people. Such a transformation can start only with top management. Before senior managers can realign behavior and beliefs throughout the corporation, they need to change their own priorities and ways of thinking."[241]

Free-Energy Governance provides a systematic and cross-hierarchical approach to empowering a purpose-directed surprise-minimizing organization.

Free-energy minimization in terms of prediction-error minimization is operating on the basis of one simple principle: minimize surprise by way of purpose-directed top-down/bottom-up generative sensing and sense-making in circular causality. It is a fairly simple principle. It requires heedfulness and constant cross-hierarchical engagement fueled by a cognitive mode geared towards learning, un-learning, and change. Indeed, the implementation of a Free-Energy Governance approach must start with the board of directors.

Free-energy minimization will prove to be a superior machine learning logic and is likely to beat any reward-pursuing 'supervised' strategy in the long-run.[242] Truly

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[240] "If one does not know to which port one is sailing, no wind is favorable." (Lucius A. Seneca)

[241] Bartlett, C. and Goshal, S. 1994. **Changing the role of top management: beyond strategy to purpose.** Harvard Business Review; p. 80; emphasis by DBK

[242] Raviv, S. December 2018. **The genius neuroscientist who might hold the key to true AI**. Wired Magazine; copied on January 5, 2020: https://www.wired.com/story/karl-friston-free-energy-principle-artificial-intelligence/

appreciating this difference in machine-learning logic and applying it to organizational science will eventually shape the seismic shift that *logics of organizing* will need to undergo to cope with a discontinuous world.

The very roots of the weakness (or incompleteness) of Ringier's digital transformation appears to be the very lack of an invigorating and magnetizing purpose. Neither diversification nor digital transformation are target models as an end in their own right. To measure success of digital transformation as a function of (M&A generated) digital EBITDA contribution while the underlying profitability growth is rather stagnating and free cash-flow is likely to be compromised in service of a geared balance-sheet breeds the implied risk of not '**confronting the brutal facts**' (Wurtzel, 2012: 20).

Ringier's original purpose as a *dedicated publisher*, cultivated throughout the 20th century, got destroyed in the face of entropic erosion in the print media industry. Ever since, Ringier has executed brilliantly buying digital businesses but has not succeeded in clearly defining a corporate purpose beyond the hollow concept of digital transformation. Indeed, the 'Mobiliar transaction' announced in February 2020, at the very time when this dissertation was completed, may lay the foundation for a new-found purpose and a long-term target model, beyond a precarious fight for survival.

As Jan Ståhlberg reflects upon the foundation of EQT, one may distill elements that determine long-term performance and firm survival: "*Yes, EQT has been an incredible success story. The original team was in a range of 26-34 years old when the firm started in the mid-1990s, supported by the Wallenberg family. The success of the Wallenberg family, which at the time was in its fifth generation and controlled a third of Sweden's stock market, comes really down to* ***a long-term approach powered by a circular reasoning****: what is good for society is good for the country, and this will be good for our companies and eventually our family.* ***Society was always a central focus of all business decisions****. In my view, EQT's success cannot be separated from that background story. […] You must* ***invest into structures, into a future that serves well beyond your typical 5-year PE investment horizon****.* ***Our competitive advantage in the PE industry was to develop an operations-focused industrial approach****. Obviously, many large companies laughed at us because for them PE and long-term is a contradiction in itself.*" (Ståhlberg, 2020: Annex VIII; emphasis by DBK)

(1) Timeless purpose, (2) long-term target models, (3) free-energy minimization, (4) strong operational execution skills, and (5) and clearly defined principles and

values that are tangible in their commitment to societal well-being and environmental sustainability: if all five elements are at work and articulated in simple ('explainable') language, and communicated to all members of the organization, the firm's long-term prospects will be substantially enhanced. The board of directors rather than executive leadership only must ensure that those elements come to life – and, more importantly, stay alive.

Firm survival is essentially determined by '**learning from the future as it emerges**':

"*We have the gift to engage with two very different qualities and streams of time. One of them is a quality of the present moment that is basically an extension of the past. The present moment is shaped by what has been. The second is a quality of the present moment that functions as a gateway to a field of future possibilities. The present moment is shaped by what is wanting to emerge. That quality of time, if connected to, operates from presencing the highest future potential. The word presencing blends 'sensing' with 'presence'. It means to sense and actualize one's highest future potential. Whenever we deal with disruption, it is the second stream of time that matters most. Because without that connection we tend to end up as victims rather than co-shapers of disruption*." (Scharmer, 2018:9-10)

In a discontinuous and distributed world "perhaps all social institutions…face disruptive forces so fast, big, and unpredictable that every entity will fall within years or decades, without exception. **Can we still stave off decline in the face of severe turbulence?**" (Collins, 2009: 118; emphasis by DBK)

Free-Energy Governance is not about optimizing a firm's 'shelf-life' or performance for the sake of it. Free-Energy Governance is about engaging the firm's full energy (growth) potential towards mastering continuous strategic renewal in the face of 'surprise' that this discontinuous and distributed world increasingly beholds.

'Free-Energy Governance' is the opening chapter of a new logic of *organizing* centered around the triplet of (1) structure, (2) cognition, and (3) capabilities. FEG establishes a unique framework of firm empowerment in form of top-down/bottom-up prediction-error-/surprise-minimization, laying a foundation for the sustainability of continuous and successful strategic renewal determining firm outperformance and survival.

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Annex

Annex I: Ringier in historical perspective

‘From initial failure in publishing to dedicated focus on printing’ summarizes the company’s first chapter since foundation[243] until the ‘blockbuster’ innovation of *Schweizer Illustrierte* in 1911 started recalibrating the company’s DNA and growth path towards publishing[244]. The launch of Blick in 1959 confirmed and reinforced a culture and determination for organic product innovation that defined the company’s development well into the start of the 21st century[245]. By the 1970s, the company’s self-

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[243] “Born to a deeply religious family, Johann Rudolf was the first Ringier son in seven generations not to enter priesthood. Instead, he completed an apprenticeship as a printer and founded, in 1833, the Ringier Company. Having spent his entire savings on printing equipment, Johann Rudolf was forced to set up shop in the back room of his brother’s house in Zofingen, a small town in central Switzerland. The company’s first publication was a local weekly that published government notices and reprinted news stories that had appeared in the regional press. When printing orders kept Ringier busy, the four-page weekly, which cost about a day’s wages, appeared with empty pages. Johann Rudolf and his son Franz Emil turned out to be better printers than publishers. They completely missed the late 19th century surge in demand for political news and saw themselves forced – in the face of fierce local competition – to shutter their weekly in 1885. The Ringier company, however, survived, thanks to continuous investments in the best available printing technology of the day.” (Oberholzer-Gee, 2021: 2)

[244] “It was Paul Ringier, the third generation to lead the publishing house, who oversaw the company’s first sustained publishing successes. The daily Schweizerische Allgemeine Volkszeitung (SAVZ) introduced classified job ads and encouraged reader loyalty by **bundling the newspaper subscription with accident and disability insurance**. Ringier’s most significant success, however, came with the publication of **the Schweizerische Illustrierte Zeitung (SI) in 1911**, a magazine designed to compete with the German publications that dominated the Swiss market. Unapologetically populist in its orientation – “**we publish articles without impenetrable philosophism, theosophism, or any other kind of –ism,” declared Paul Ringier** – the magazine focused on photos of current events. Ringier considered the title to be a complement to daily newspapers such as the SAVZ. Before the development of the 35mm Leica camera and the first flash bulbs in the late 1920s, newspapers typically lacked photos, and the SI sought to fill this gap. The title was largely advertising financed. In order to foster reader loyalty, the SI published serialized novels, crowd-sourced the then still-rare photos, and emphasized Swiss themes and culture…The SI’s mix of photos and brief articles about stars and international affairs proved a winning formula. The title quickly advanced to become the market’s leading magazine.” (Oberholzer-Gee, 2021: 2; emphasis by DBK)

[245] “In **October 1959, Ringier launched Blick**, the country’s first tabloid. The response was immediate. The country’s leading politicians and businessmen deplored the sensationalist paper, denouncing its ‘un-Swiss style of journalism’. Students took to the streets in protest, and advertisers shunned the rag. The negative impact of Blick on the national political discourse was even debated in parliament. Readers, however, loved the tabloid. Its first issue was sold out in half a day. **By the early 1970s, Blick was the country’s leading paper** with a market share of about 10% in a crowded field of almost 300 dailies. The tabloid’s success reflected its differentiated market position, Ringier’s expertise in publishing illustrated

identity was firmly that of a publisher rather than a printing house[246]. The company's expansion into Eastern and Central Europe after the fall of the Berlin Wall was a natural product of an opportunistic, innovation-centric, and growth-oriented mindset – then probably best personified by Thomas Trüb, Head of Business Development and then Head of New Media, who enjoyed the fullest support of Michael Ringier.[247]

After the initial euphoria characterizing the opening of Eastern and Central European markets in the early 1990s, by the dawn of the 20th century, economic stagnation and a reality-check of market expectations kicked in. At the same, the *traditional printing business* started to become a 'sunset business' while disruptive print innovations (such as the freesheet commuters-dedicated '20 Minuten'[248]) as well as 'digital disruption' started seeding the grounds for environmental scarcity in the *traditional publishing business* eventually leading to entropic erosion in Ringier's core publishing business.

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magazines, and a business strategy that emphasized scale advantages." (Oberholzer-Gee, 2012: 2-3; emphasis by DBK)

[246] "Heinrich Oswald, a food industry executive, was Ringier's first professional manager who lacked a background in publishing. Appointed in 1972, Oswald adopted a new divisional structure that elevated the editorial function. '**Our business is information**,' he declared, 'don't think of Ringier as a printing company.' Under Oswald's leadership, the company exited paper production and closed some printing plants. At the same time, it broadened its scope, investing in new media businesses such as film production and television." (Oberholzer-Gee, 2012: 4; emphasis by DBK)

[247] «Anfang 1994 erscheint im Schweizer Fachblatt *Persönlich* ein Artikel über 'Ringier's Business Development'. Titel der Story: 'Trübs Welt ist grenzenlos'. Hier lässt 'Ringier's oberster Business Developper' seine Phantasie um den Erdball kreisen, zeigt sich überzeugt, dass auf der Welt für lukrative Ideen noch genügend Platz sei. Sagt's und spinnt den Gedanken sofort bis an die Grenzen der Vorstellungskraft weiter: 'Denken Sie etwa nur an Afrika!' Und dann gibt es ja noch naheliegende Opportunitäten, gewissermaßen direkt vor der Haustür, in Osteuropa. In Polen, Rumänien, Bulgarien. Dort pflanzt Thomas Trüb is ekstatischem Tempo seine *Cash*-Klone in die Welt. Im Dezember 1992 *Capital* im rumänischen Bukarest. Im März 1993 *Kesh* im bulgarischen Sofia und *Cash* im polnischen Warschau. Im April 1993 *Kápé* im ungarischen Budapest. Zusammen mit der schweizerischen Urmutter *Cash* und mit *Profit*, der ersten Adaptation in Prag, ist nun sechs Mal *Cash* auf dem Markt, Europas größte Wirtschaftspublikation mit einer Druckauflage von wöchentlich einer halben Million Exemplaren. Wo immer möglich stößt Thomas Trüb über diese Brückenköpfe mit Boulevardzeitungen wie *Blikk* in Ungarn oder auch Frauen- und TV-Zeitschriften nach. (Lüchinger, 2019: 37-38)

[248] "**Blick's circulation peaked in the mid-1980s and declined thereafter**... The decline reflected the advent of freesheets in the Swiss market, the rise of the internet, and a sense that Blick had lost its distinct voice. **Schibsted, a Norwegian media group, launched the free 20 Minuten in 1999**. A year later, Metro International, a Swedish publisher, followed with its own freesheet. Both papers were aimed at commuters who used public transportation. By the early 2000s, 20 Minuten had replaced Blick as the daily with the largest circulation." (Oberholzer-Gee, 2012: 4; emphasis by DBK)

On August 9, 1995, Netscape[249], the world's first 'internet browser', went public on NASDAQ.[250] Michael Ringier was first appointed CEO in 1985 and Chairman of the board of directors first in 1991 (until 1997) and again in 2003[251]. So, the 'highs' of Netscape as a symbol of the internet's public birth as well as Google's IPO on August 19, 2004 fell right into Michael Ringier's leadership. Both IPOs – 'silent signals' sheltering a disruptive force eventually leading to the traditional media industry's environmental scarcity in form of entropic erosion – escaped his and other leaders' attention and imagination, for probably too long.[252]

As the first decade of the 21st century was drawing to a close and following the – at its time rather opportunistic – Scout24 acquisition, the signing was on the wall: strategic renewal is critical to Ringier's long-term survival. But the strategy must be less opportunistic, more goal-directed, more programmatic and, above all, digital. CEO Marc Walder timely emerged as the author of this strategic renewal orientation. Rather than in-house innovation, Walder turned, in time-pressured manner, to external growth in form of M&A and joint venturing. He saw the facets: marketplaces and entertainment, and all interwoven with and powered by the existing print brands. The only limitations: time and capital. But the strategic orientation remained rather 'context-centric'. The massive advertisement market potential of data-driven user profiling that Facebook, Google, and others were monetizing was not yet on the radar.

In summary, it were in-house product innovations such as, for example, *Schweizer Illustrierte* and *Blick* (*strategic control*) that catapulted Ringier into a first-class European media company during the 20th century. Ringier's 21st century strategic renewal (digital transformation), however, has been largely financial control centric. M&A and, in particular, joint venturing have been taken to a level where it is rather hard to determine whether Ringier is now a financial or still a strategic holding company.

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249 "The browser was once dominant but lost to [Microsoft's] Internet Explorer and other competitors after the so-called first browser war, its market share falling from more than 90 percent in the mid-1990s to less than 1 percent in 2006." (Wikipedia; copied on December 27, 2019: https://en.wikipedia.org/wiki/Netscape)

250 "On August 9, 1995, Netscape made an extremely successful IPO. The stock was set to be offered at US$14 per share, but a last-minute decision doubled the initial offering to US$28 per share." (Wikipedia, copied on December 27, 2019: https://www.google.com/search?q=which+year+netscape+IPO&rlz=1C5CHFA_enUS865US865&oq=which+year+netscape+IPO&aqs=chrome..69i57.7988j0j7&sourceid=chrome&ie=UTF-8)

251 "In 1983, Michael Ringier joined Ringier's management and two years later he was appointed CEO. He has served as chairman of the board of directors since 2003." (copied from Ringier website on December 27, 2019: https://www.ringier.com/en/organization/michael-ringier)

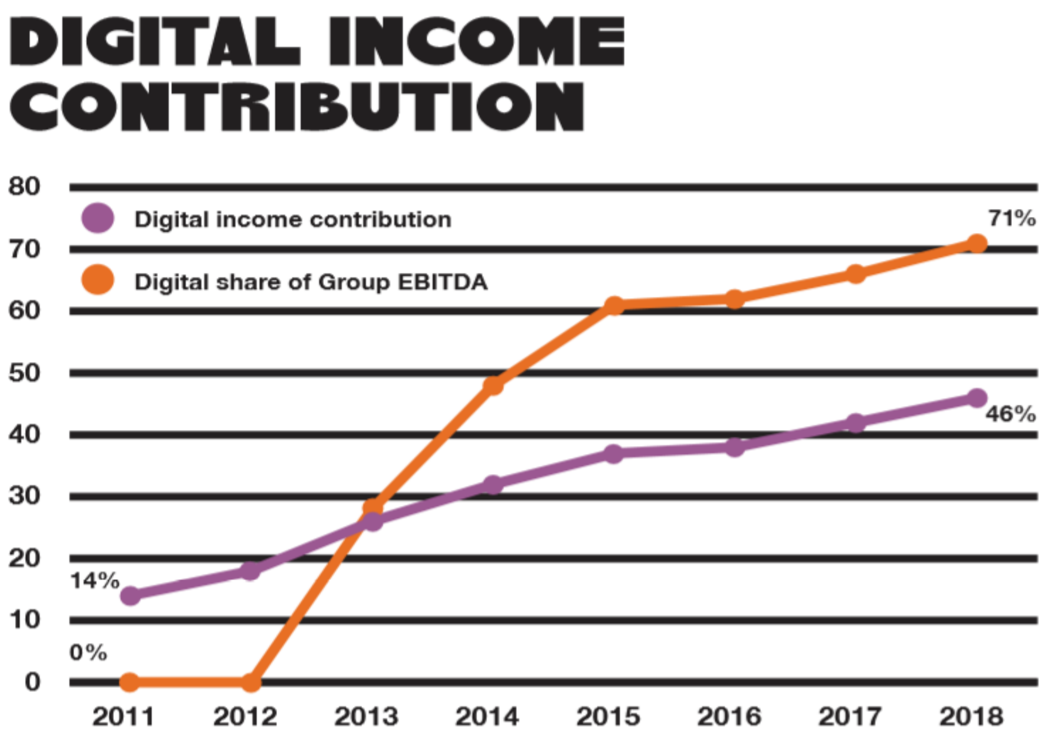
252 Lüchinger (2019:11) is making a similar comparison to the Netscape IPO.

Annex II: Digital transformation - a profitability perspective

Table 10 illustrates a convincing picture of a successful digital transformation. By 2018, 71% of EBITDA is generated from digital businesses that were non-existent in 2007/8.

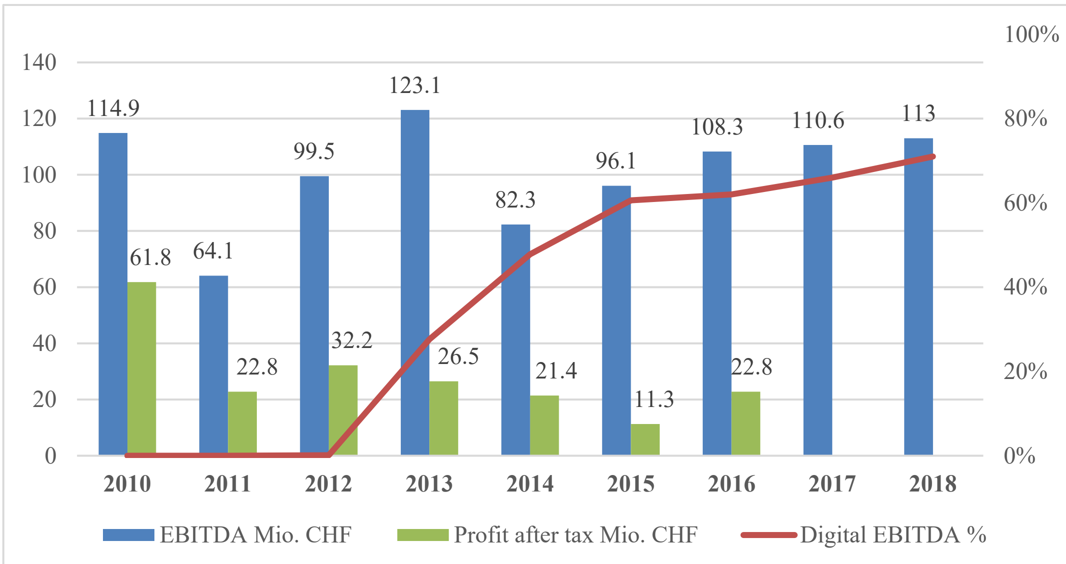
"*Where would we be now if we hadn't invested?' is an essential question. Upon reflection, one must conclude that the investments were absolutely necessary. Digital transformation was not a 'nice-to-have' but a 'must-have' change. Our company would lack nearly 80% of its EBITDA if we had not invested in digital businesses*." (Bassler, 2019: Annex IV)

Table 10: Digital income contribution (Ringier Annual Report, 2018: 160)



However, a more in-depth analysis of the profitability summarized in Table 11 below clearly shows that profit growth is non-existent: "*We saw in 2012 that print declined more sharply than we had expected in 2008, for example. In 2012, the sense of urgency was rising*." (Bassler, 2019: Annex IV) Further, with effect of 2017, profit after tax was no longer reported altogether. Once depreciation and debt-servicing costs are taken into consideration, not only profit growth but overall profitability can be reasonably expected to be lower than what public data may lead to imply.

Table 11: Ringier profit analysis (2010-2018)



Source: Ringier Annual Reports (2010-2018; no reported 'Profit after Tax' post 2016)

Annex III: Guide for sensemaking interviews

1. How do you define digital transformation? What are the relevant KPIs; qualitative and quantitative?
2. Based on the selected events, in your opinion, what were the 2-3 most important ones contributing to Ringier's digital transformation?
3. In retrospect, going back to 2008: how would you (re)-define the context (why?), content (what?), and process (how?) dimensions demanding strategic renewal?
4. If you had to describe the dynamic interaction between bottom-up field intelligence and top-down strategic decision-making (including the board), what role did you assume as CEO/CFO/board director in sensing, making-sense-of, and defining strategic renewal?
5. What was the least obvious market signal that you paid attention to? Why? How did this particular attentional engagement impact Ringier's financial success as a digital media company?
6. Did you embrace strategy-making as a way of aligning the company with a changing market environment and/or did you embrace strategy not so much as a matter of environmental adaptation but enactment of your own vision of the world?
7. The publishing industry has been challenged globally in terms of environmental scarcity. How did your strategy (content dimension) differ from that of other leading media companies?
8. To what extent has Ringier's digital transformation re-defined the firm's (formal and informal) strategy process?
9. Specifically concerning each of the selected events: (1) Who were the main organizational actors to originate, direct, and manage the event? (2) What role did the board of directors play in this specific event? (3) How did the board of directors and top management interact regarding the decision-making process? (3) What was your personal role in the process? Which factors determined successful execution?

Annex IV: Officially approved interview statements

Marc Walder, CEO, Ringier AG; April 2, 2019a (Michael Gasser)

An advantage is that we have a small committed family. A disadvantage is that we do not have as much pressure on our shoulders as is the case with a listed company. A family business like Ringier - closely aligned and fast decisions - is a tremendous advantage relative to a listed company.

I do not want to sound egocentric. But within our executive board, I was the only one to drive this transformation strategy forward.

M&A was the focus. We were looking for good targets, for good opportunities. What's on the market? And just buy it. Mainly or often together with a partner.

We could have acquired Ticketcorner alone. But it is a technology game. We decided to go together with CTV Ticketing. Why? Because they had already at that time 200 engineers working on it. That helped us tremendously because we outsourced basically the technology heart, the backbone to Bremen (where today about 300 to 400 engineers work). We could never have done this alone for Ticketcorner.

I would say the very first step was the initial acquisition of Scout24 at a purchase price of around 170 million CHF in 2008. I started as CEO of Switzerland then and this kicked-started the digital transformation process.

One of the very first measures I took upon my appointment was to create an M&A Department.

I remember the very first meeting in 2008 when Ringier employees met Scout24 employees. The Ringier employees had no clue what they were talking about. How this business works. How this technology works. How these transactions work. How these pricing models work. Today, I think we are one of the top three investors in marketplaces in Europe.

Two things: digital journalism and digital marketplaces. I think that's probably the essence of Ringier's digital transformation process.

I really believe in hard-working and fast learning people. I once said at a conference: "fire fast and hire slow". I got quite a shitstorm because you are not supposed to say such things in public. But letting those people go who were not able to change, who didn't want to change, who were too slow has been essential to our success.

The most important thing was a complete and close alignment between the family-shareholders, the board and me. We are a family company and at the end of the day, it's the family that decides. We have a strong board of directors. Theoretically, the family can always overrule the board. But to date they never did because the governance arrangement works well. This triangle of myself, the board and the family-shareholders laid the foundation for success. We were able to make decisions fast and often faster than competitors. At times, this was a critical competitive advantage in the M&A market.

Today, my role is much more strategic rather than physically scouting for opportunities, which was the case back in 2008.

I think we are fast and smart followers. I think we are extremely good at execution. We are extremely good at observing and analyzing the market environment.

Let's go back to 2008 when I was appointed CEO Switzerland and the digital transformation process started. Actually, in this room, Michael was sitting here, I was sitting there, Annette Ringier was sitting here, and Evelyn Lingg-Ringier was sitting there. The four of us, during this crucial meeting that lasted 90 minutes, we agreed that we will be taking risks and acquire new businesses. Probably marketplaces.

A lot of my friends said: You are nuts. You're going to ruin the family. You're going to spend too much money. You're taking too many risks. Big tickets, big bets. Indeed, we paid multiples of 16-18 times EBITDA, implying you need 15-17 years for payback. However, this view ignores the fact that these platforms are growing often exponentially. As a matter of fact, with some of the platforms, we have already reached break-even return on investment now.

Two years ago, I announced that Ringier needs to become a tech and data driven company.

One of the main KPIs is the digital part of the EBITDA. That's what we measure at the end of the year. Ringier has done the transformation from zero EBITDA digital in 2011/2012 to 71 percent in 2018. So, within six years from zero to 71 percent. That is probably the most important KPI.

Then there is, of course, the digital part of the turnover that's not such an important KPI. Then there are a lot of digital transformation measurements, which are difficult to express in quantitative KPIs, I'm afraid. This is, in particular, true for the cultural dimension of digital transformation: the self-understanding of our employees, the sense of urgency, and, not least, the paranoia that I want to be implemented into the heads of all employees.

To be paranoid and be concerned about the unknown is an essential foundation for success on the path to digital transformation. Most important, however, in this context is when I announced some two years ago that Ringier needs to become a tech- and data-driven company. People kept looking at us as a content company. Everyone now understands we are tech- and data-driven. If you are not, you are out of business.

As Group CEO, it's important to be closely connected to all operating entities. That's why I myself sit on the board of directors of most joint ventures.

Digital content or content on digital platforms was growing and growing - everything for free. That was the famous 'Geburtsfehler' [birth default]. It was clear that we had to move because we were sitting - to put it dramatically - on a sinking ship. Now was 2008 early or late to kick-start digital transformation? Compared to other publishers, it was extremely early. Many did not act until this day. But overall, in 2008 digitization was moving towards Web 3.0 and in that regard, we were late in 2008. Early would have been 2001/2002.

But our business was just too good until 2008 to look elsewhere for a profitable future. Certainly, in terms of P&L logic, there was no urgency. In Europe, 2007 was a great year for many media companies. 2008 was a great year. We were content-centric but understood to make money in a 'free-content' world, we must become transaction-based. Digital marketplaces were the obvious target model.

The entire media industry completely failed to understand Google and Facebook. Both companies had close to zero revenues 15 years ago. We were all joking especially about Facebook. We said: 'they have millions or billions of people on their platform, but they don't know how to make money'. I remember myself saying this sentence on several occasions. Today, Facebook has more than US$50 billion in turnover from advertising.

So, Facebook and Google, for example, took the money that was spent on media inventory. Data-driven advertising was their weapon. It's all about collecting the right data and distilling the relevant data insights. We, the entire media industry, had also huge audiences, millions of people coming day by day even several times per day to our platform. But we have completely missed and then fucked-up the leverage of data.

We had no ‘data urgency’. We seriously continued thinking that we can sell through context. We have great context and we have millions of people. That’s enough for the advertising industry. Whereas the data strategy that Google, Facebook, YouTube, Amazon and others pursued realized that the advertising market doesn’t want to have context but profiles. So, Facebook, for example, just said we’re going to give you 10 different profiles and you can buy them by the thousands: you want ten thousand women below 25 or - more granular- an urban BMW man. We completely fucked up, and now 80 percent of the digital advertising money is going straight to Google, Facebook, Amazon, and the likes. The media industry hasn’t found an answer to that. That’s 80 percent of the cake. We are all now focusing on data and data alliances. But it is very challenging to catch up on that front. We need to anticipate the next big wave rather than chasing the ‘lost wave’.

Annabella Bassler, CFO, Ringier AG; April 11, 2019 (Michael Gasser)

Role models like Schibsted Media Group and Axel Springer gave us the confidence that our strategic orientation was the right one and helped us proactively identify potential opportunities.

The family was behind the M&A-based transformation. There was a high level of support in the area of decision-making.

As a family business, you have other financial KPIs. We have a strong focus on the cash perspective. But there is no pressure in terms of public markets disclosure requirements.

The whole management was completely empowered by the Ringier family, which played such a fabulous, courageous role in this whole transformation process.

An essential question is: how do you prepare the agenda and its contents for the board of directors in such a way that both the board as well as senior management can get the most out of the board meetings? This process is important since the board cannot be expected to have in-depth knowledge of certain topics such as tech and data know-how.

The board of directors supported, pushed and challenged the transformation so that all these acquisitions could really be mastered. Furthermore, the network of the board of directors was important. The role of the board of directors has always been very, very good, challenging and supportive. When it comes to the volume of financing, courage is always part of the equation.

After we acquired Onet and JobCloud, we breached a credit covenant once, which was immediately solved by a waiver of the bank. In such moments, the strength of the team consisting of family, board of directors and management team shines through.

The CEO had a leading role in the transformation. He was the head behind the transformation. Walder always says: 'Whoever is not paranoid about the changing market environment should not be part of the global executive board (GEB). We have to move and develop fast.'

The decisions for important radical innovations and acquisitions have always been top-down. There are now incremental initiatives and acquisitions that are also bottom-up.

Trüb wrote 'Onet plus Jobs' on the note. Then there was the question of structure and financing. And we did exactly this: we acquired Onet and Jobs. After all, Onet and Jobs catapulted us into a whole new sphere. I think the triggers were the critically important acquisitions. They were always top-down. But you can already start seeing a slight change. We notice that bottom-up generated acquisition proposals start emerging. There are now incremental initiatives and acquisition proposals that are also bottom-up.

The finance department is divided into group accounting, controlling, treasury and M&A. In addition, there are division CFOs for publishing and marketplaces. All CFOs of the subsidiaries worldwide have a dotted reporting line for each of the two division CFOs. And you can escalate to me at any time. But this ensures that an accounting manual that applies to the Group is consistently implemented.

'Teaming up with the Best' is a consciously cultivated approach by Ringier's management. This is reflected, in particular, in the diverse number of joint ventures within the Ringier Group.

This is our major learning. Always try to keep the acquired company's founder and/or management team on board for as long as possible - via an earn-out component, for example. Only this ensures know-how transfer and a sustainable continuity.

The increasing number of joint venture partners increases the complexity of overall management and financial management in particular. Keeping the balance between corporate standards and a certain entrepreneurial freedom is important. We focus on not overwhelming the acquired companies.

In data and tech, we had almost no people and today we have a strong team. Ringier has spent enormous financial resources on transformation and had to acquire many skills.

Media Swiss was a company owned by Deutsche Telekom. It consisted of Scout24 and the local-map business. As we had no access to the details of Scout24, the due diligence was extremely difficult. In the end, it was Trüb as a visionary who had some insight and insisted, we should just do it. More gut feeling than due process.

During the 50 acquisitions we completed, a huge amount of transactional expertise was built. Not only in terms of confidence in negotiations but also in other areas. It started so slowly in 2008. Media Swiss (Scout24) was our first relevant investment in the whole transformation. Until then, we were a pure publishing house. Of course, we were already represented in Asia and Eastern Europe.

Onet is a good example: the real work started once we completed the acquisition. I don't know how many add-on acquisitions we had to make to get to where we are today with

Onet. At Onet we have invested a lot in Onet TV - with all the videos. It was just the right thing. We now have 300 million views per month. Much more than New York Times and Washington Post combined.

‘Where would we be now if we hadn’t invested?’ is an essential question. Upon reflection, one must conclude that the investments were absolutely necessary. Digital transformation was not a ‘nice-to-have’ but a ‘must-have’ change. Our company would lack nearly 80% of its EBITDA if we had not invested in digital businesses.

An important question is: ‘how do you enable that we can even manage at this speed of transformation and cope with its complexity?’ We are very successful in having international alignment teams. We have someone who can track down all the trends for the entire publishing process and drive forward projects in this particular area, for example. We have the same set-up for marketplaces as well as tech and data.

We have a sensational team, and I am an advocate of it. It is all about people. You have to see how you integrate them so that we can get the speed to handle this complexity. The international alignment teams are very successful in doing this.

We have learned from KKR how to make companies financially fit: a business plan, roadmap, and milestones are clearly defined. If the roadmap is not adhered to, the essential question is how to realign resources and management focus.

Investments through our corporate venture capital and smaller acquisitions are less about financial returns than about the question: how can we learn in this area?

We have a very open dialogue on the Board that colleagues always know how high our financial head room is still if we want to go to a ‘net debt to EBITDA’ multiple of x. And I have always communicated this clearly at the time of the budget as well as during the financial year. There are no surprises here. We focus on EBITDA and cash.

The transformation has brought a high degree of momentum to the company as reflected in the overall transactional activity (more than 50 acquisitions and divestments) as well as the mix and mindset of the employees.

As a company, you have to see how you can ensure that the operating cash flow from all our subsidiaries is sufficiently high so that we can afford the investment activities.

We saw in 2012 that print declined more sharply than we had expected in 2008, for example. In 2012, the sense of urgency was rising.

If one wants to assess the core profitability along the transformation process, then the picture is unmistakable: print declined too rapidly compared to the growing digital revenues to compensate for this decline.

Marc Walder, CEO, Ringier AG; May 8, 2019b (Michael Gasser)

Now the strongest point of Thomas Trüb was bringing the initial kind of kick-start to the digital transformation process. But he is more of an 'ideation' rather than 'execution' person.

Where I think innovation needs to come from is at the very top. I think we as senior leadership still have to assume responsibility to do the right things. On a bigger scale. I also see us as evangelists that move forward and take everybody with us. I want us to stay young, fresh, smart and step into that learning curve. I really think the pressure should be on us as leaders.

Within the entire group, I believe it is fair to say that the two people who have been crucial to stimulation are myself and Robin Lingg. All the important initiatives came from me. It's absolutely me. 24/7. Besides that, I think Robin is somebody who is extremely pushy. At the top level, these are the main two stimulation drivers.

Product and platform innovations must emerge from within the business. Top management must provide the direction while the rest of the organization must support the execution bottom-up.

We have acquired fifty companies within ten years at a transaction volume of roughly CHF2 billion. This has inevitably resulted in the fact, that newly acquired companies stand initially alone within the group.

Michael Ringier once said, when he looked into the room during a conference, out of around 100 top executives that were gathered in the room - he realized - 60 percent were new people - compared to only 4 years ago: 'That's great, because new talent inspires. They bring new dimensions. They bring us the new ideas.

The alignment teams are for the exchange of best practices and the alignment of strategy, harmonization of technology issues or issues related to platforms - less for scouting companies.

The question of how Ringier could be described as a group led to intensive discussions. We are not a financial holding. And at the end, consensus emerged around 'strategic media holding'.

The strategy is really to stay longer with the needs of your user.

I think we are very strategic. We know we need to have a mortgage service on the real estate platform; an insurance service on the card platform; and pay-per-applicant system on the recruiting platform. Then we look for solutions. Sometimes we need to develop them by ourselves and sometimes add-on acquisitions do the job.

Christiane zu Salm, Member of the board of directors, Ringier AG (until July 2019); May 9 and May 10, 2019 (D. Bijan Khezri)

Ringier leveraged traditional publishing business models into the digital space. The worlds of print and digital - as different as they may be - have convergence potential.

Ringier and the board believe that print is outstandingly powerful in building trusted brands and can serve as a competitive edge in digital.

The family has provided strong support for the transformation in the first phase. The Ringier family still sees their identity strongly in publishing. This dimension cannot be underestimated in terms of decision-making boundaries.

The transformation also required and consequently built up other competencies on the board. Following the acquisition of Onet, new governance structures such as new committees (e.g., risk, audit, nomination) were established.

The financial dimension has certainly risen in importance as reflected in the composition of our board.

The transformation process has been rather top-down driven so far. This enabled a high degree of flexibility and responsiveness but certainly also increased performance-dependency on a rather small group of decision-makers.

Walder has been driving the transformation process with the strong backing of Michael Ringier, as representative of the controlling family.

Ideation at the mid- and lower management level rarely reached the attention of the board. The next challenge is to integrate the bottom-up approach and establish it as an integral part of the corporate DNA.

We continue working towards balancing a centralized top-down approach with more bottom-up input to match the requirements for an increasingly decentralized world. We are committed to continue improving the design of our strategic decision-making processes: top-down and bottom-up.

Use the financing and operational governance expertise from a firm such as KKR.

Cultural changes are far more of a complex and longer process than executing M&A-driven strategic transactions.

Onet challenged the organization from both a financing as well as a portfolio restructuring point of view. We paid a significant price for a valuable and important asset that instantly transformed Ringier into a technology-driven digital player. However, at the same time we had to seriously consider whether we can continue business-as-usual. Certain activities within the group had to be reconsidered and stopped.

The acquisitions accelerated the transformation significantly. This acquisition-led strategy was relatively expensive.

More importantly, it was Onet that set the company on a path of M&A that shaped Ringier's digital transformation; for example, it professionalized the board with newly created and dedicated committees (e.g., risk, audit, nomination).

Advertisement remains our all-dominant source of income as well as transaction-related fees, in particular in classified markets. Business model innovation can be harder than product innovation. Acquiring digital classified markets - though adding a transactional model – is probably less business model innovation. But business model innovation will continue being an important focus of the next wave of strategic renewal.

We are 'fast-followers' rather than first-line innovators. We spot relevant opportunities and we understand how to execute them. This is certainly an important core competence. Whether this is enough for the future remains to be seen.

Interview Claudio Cisullo, Member of the board of directors, Ringier AG; May 13, 2019 (Michael Gasser); October 13, 2019 (D. Bijan Khezri)

Ringier consists of two business models (publishing and marketplaces), which together generate added value.

Onet was an important step in the digital development of the Ringier group and the acquisition of new capabilities.

Ultimately, it's always a family decision. They represent the owners of the company and thus bear the responsibility. However, in order to make a decision, you need sound information and advice. This is a critical role the board can assume.

With Michael Ringier, the leadership of the board has been rather consensus driven. We should question the core of our DNA and activities much harder and more critically. But, in the end, the board's strategic role is a matter of ownership structure: private/public or concentrated/distributed.

I like to believe that during the past two years, in particular also with the appointment of Lukas Gähwiler, we have strengthened the effectiveness of our board. We critically review and question ourselves. Further, we reached out beyond the board-table to connect with the rest of the organization - beyond just the usual CEO information flow.

The board of directors has an advisory and questioning role, on the one hand to challenge the management and on the other hand to offer the family a good basis for decision-making.

Indeed, the traditional concept of the board getting together a few times a year, maybe some conference calls in-between, is not working any longer. Certainly not, if the board mandate is to fully assume its strategic responsibility, which is the law in Switzerland.

To put a plain vanilla view on the table and to challenge the management on any given topic and situation is the role of the board of directors. The purpose of the board of directors is to develop a good basis for decision-making and to challenge the management, as well as to assess the situation in the most pressing areas.

Marc is the CEO who made this all happen. He took many risks but throughout he had the trust of the family. The family feels comfortable that Marc is the right guy. But Robin Lingg and others are equally important in driving the transformation. There is no cluster risk at all. Not at all.

I will not put or pick a name of any particular person. The transformation has been a team effort. It is a whole ecosystem, within and outside the company.

The innovations that are emerging bottom-up are carried out directly by the relevant management resources.

Ringier is now trying to move from acquisition-driven change to the development of its own ideas.

The fact that the transformation has been rather top-down and M&A driven has not compromised our in-house innovation capability. On the contrary, I would say that we have not only acquired so much digital talent but Ringier does a great job in empowering those people to drive innovation.

First you have to learn to walk before you can run. We learned how to run during the transformation. Now we have to make sure that we run faster than others. The future will show whether we are capable of doing this.

We have a lot of innovation-centric thinking in terms of openness to new business opportunities. So out of a scale of ten, I would say that Ringier scores eight in most of the important fields relevant to digital transformation.

A lot of know-how had to be recruited or purchased externally. This knowledge had to be integrated into the Group. This integration of new employees and companies leads to increased complexity and demand on internal alignment.

Well you know, I think everything has to do with motivation; with having the right people on the field. I think it is the responsibility of the senior management to motivate all team members and not make them feel like a guest of this journey.

Good transformation never ends.

Well, first of all, Ringier has 105 participations. So, we can really call the Group a diversified company. It's very complicated and very challenging. Just think about budgeting. Just think about the consolidation process and then you know.

The main drivers behind the digital change were the acquisitions. The number of acquisitions (50) and the related financing (almost CHF 2 billion) summarizes the story.

Identifying the right opportunities and executing them is more important than simply generating ideas.

The old business model is still needed. The new business model is still under construction.

We are currently building a new aircraft while flying the plane. Therefore, we always have to be able to think in two different ways: exploiting existing cash flow and exploring future sources of profitable growth.

Now, beyond publishing and digital marketplaces, our challenge is to develop the third leg that can secure future growth. We have not found it. I doubt whether it can come from within the company as it has to be something radically different from what we do today.

In terms of innovation, Ringier is a fast follower in a global perspective. In Switzerland, Ringier is more a kind of pioneer.

We are entrepreneurially driven while highly sensitive to potential pitfalls. We are not a start-up company.

Digitization must be seen in a broader perspective than pure financial KPIs. It is about attitude, processes, efficiency and many other skills and aspects. It is a matter of mindset.

At the end, acquiring digital businesses was critical for Ringier in terms of skills and brains, which understand digitalization and market needs.

Interview Michael Ringier, Chairman, Ringier AG; June 25, 2019 (D. Bijan Khezri and Michael Gasser)

The initiator of the digital transformation was Trüb with Media Swiss (Scout24 Schweiz). This has strongly driven further expansion into various fields (Asia, Africa, digital)

In the publishing sector, more talent and competencies need to be brought in to take the next step. By implementing the newsroom (Blick etc.), Ringier achieved convergence of digital and print at an early stage.

The culture has also changed. From total relaxation in the company to positively tense nervousness. Today, the business can change permanently. From a rather stable business model - buying a new printer every 20 years - to a constantly changing business model, for example.

An acquisition was never made without the consensus of the entire family.

Today, only Blick is 100% owned by the Ringier Group.

Ringier will not wish to be listed as a holding company. Nevertheless, pragmatic scenarios are discussed where the IPO of a subsidiary might make sense.

The stock market is partly responsible for destructive pressure, which - from the perspective of a rapidly changing media industry – leads to short-termism. Wrong decisions are the likely consequence. The stock market's short-term pressure for growth eventually can lead to unfavorable constellations in the long term.

In the course of the process, new competencies are always being developed in the board of directors. Loyalty, commitment and knowledge are connecting elements. The digitization of our business also required a change in the composition of the board of directors. Today we have new committees and new members, such as bankers.

At Ringier, people have a high priority. In particular, the constellation of the board of directors is designed for people who get along well.[253]

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[253] "Michael Ringier completed his first course of studies at the Ringier School of Journalism along with Uli Sigg and Thomas Trüb." (copied from Ringier website on December 27, 2019: https://www.ringier.com/en/organization/michael-ringier

Now the M&A approach is changing as innovation from within is gaining in importance.

M&A was necessary in order to acquire competencies. Before the transformation, there was simply no know-how in the digital field.

Traditional publishing opens doors and is the basis for building networks. This is often underestimated. That is why publishing is a very 'profitable' business model (not necessarily in a financial sense). But publishing positively supports the other business models.

For quite some time now, we have been in a certain status quo. Now we have to challenge ourselves to move to the next level. Without investments, digital business models will lose profitability.

Interview Markus Hongler, CEO, Mobiliar, May 29, 2019 (Michael Gasser)

Due to the form of a cooperative or a family-owned company, there is a restriction in the procurement of capital for expansion. A capital increase is only possible by consensus or through outside capital. When borrowing capital, the strength of the balance sheet is everything.

There is no pressure from the stock market. This ensures that certain projects are not stifled if they are not running at full speed and, on the other hand, that less has to be invested for roadshows, etc. The responsibility for bringing pressure to bear on the company lies heavily on the shoulders of top management and the board of directors.

On the other hand, the joint venture partners also benefit from Ringier. This enabled Mobiliar to learn a great deal about marketplaces from Ringier.

In its own transformation, Mobiliar was able to strongly follow the role model of Scout24 - through methods such as agile teams, modern office space, new forms of work, and many more. Scout24 served as a kind of lighthouse within the Mobiliar group.

The Scout Group is operated as an independent company. Innovation is expected to be driven by the executive management. We try to understand and support them.

The Scout Group itself is an ecosystem and the particular interests of the joint venture partners are only taken into account in consultation with the management.

In order to bring knowledge into the company, each joint venture partner has brought in an independent expert in addition to the representative.

Annex V: ‘Ringen um Ringier’ - selected quotes

“Unklar ist auch: Wo steht das Haus punkto Profitabilität und Digitalisierung im Verhältnis zu national und international vergleichbaren Wettbewerbern? Auch da wünscht der Verwaltungsrat gesichertere Informationen. Im September 2011präsentiert CEO Christian Unger eine Studie zum Thema. Titel: «Benchmarking von Ringier mit europäischen Medienunternehmen». Dabei werden zwei nationale und vier internationale, gut vergleichbare Medienunternehmen typologisiert und mit Ringier verglichen. In Europa Axel Springer: «Traditionsreicher und ehrgeiziger deutscher Zeitungs- und Zeitschriftenverlag auf dem Weg zum internationalen, digitalen Konzern»…Schibsted, an der Börse kotierter, international aufgestellter norwegischer Medienkonzern: »Nimmt eine führende Position bei Print- und Online-News in Skandinavien ein und expandiert mit seinen Online-Aktivitäten international.» Sanoma, ursprünglich finnischer Medienkonzern: «Europäisches Medienhaus mit starker Position in Lernmaterial und -lösungen, erweitert Mediensparte durch TV-Zukäufe. Daily Mail and General Trust plc (DMGT), an der Börse kotiertes Medienunternehmen: «Britisches Medienhaus, sowohl mit Print-Titeln, als auch Online-Aktivitäten, Business-to-Business-Informationen und Events. Ein ausgewogenes Portfolio, aber Werbeverluste beim Daily Mail schwächen Gesamtsituation.» In der Schweiz sind die Vergleichsmaßstäbe NZZ und Tamedia…Tamedia: Ist neben Ringier «das offensivste Schweizer Medienunternehmen, mit bereinigtem Portfolio und Fokus Zeitungen Schweiz und anspruchsvoller Digitalstrategie.» Somit ist klar: Rund zehn Jahre nach dem Platzen der Dotcom-Blase verfolgen praktisch alle innovativen Großverlage teils sehr disparate Digitalstrategien mit dem Ziel, die Abhängigkeit von den bröckelnden Auflagen ihrer Print-Titel zu reduzieren.“ (pp. 136-37)

“Aus dem Vergleich mit nationalen und internationalen ähnlich gelagerten Wettbewerbern resultiert für Ringier aber auch mehr Klarheit für die eigene Digitalisierungsstrategie: Was mit dem Kauf der Swiss Media-Gruppe eher opportunistisch begonnen hatte, hat sich nun zu einer kohärenten Vorstellung darüber entwickelt, wie das Schweizer Medienhaus in die digitale Zukunft segeln will: Die traditionellen Medien-Kernmarken wie etwa Blick-Gruppe sollen über die Weiterentwicklung von Webseiten und Apps zu Brands im Digital-Publishing werden. Ein nicht-journalistisches digitales Business, bestehend aus Marktplätzen – Auto, Immobilien, Jobs – sowie E-Commerce – Geschenkidee, Dein Deal, Qualipet -, soll weiter ausgerollt und zum Wachstumstreiber für den gesamten Konzern werden. In der Schweiz soll zudem der Bereich Entertainment neben Publishing und Online zum dritten Pfeiler ausgebaut und ebenfalls zunehmend digitalisiert werden. Ziel ist es, bis ins Jahr

2012 ein Fünftel des Konzernumsatzes aus digitalen Erlösen zu erwirtschaften.“ (pp.138-39)

“Der Schweiz-Chef ist der Treiber der digitalen Entwicklung im Hause Ringier, und als solcher schiebt er sich immer stärker in den Vordergrund. Anfang Oktober 2011 gibt Marc Walder der Schweiz-Ausgabe der deutschen Wochenzeitung Die Zeit ein großes Interview, in dem er folgende Sätze sagt: «Es gilt, rund 50 Gesellschaften zu betreuen. Viel läuft über das BlackBerry. Ich habe 20 Verwaltungsratssitze innerhalb von Ringier. Das System beruht derzeit zu stark auf meinen Kontakten, dem Vertrauen dem Haus Ringier und mir gegenüber bei den Geschäftspartnern. Dies muss nun auf verschiedene Schultern verteilt werden.» (p. 149)

“In der New Economy ist potentiell alles disruptiv. Ein Geschäftsmodell, das heute funktioniert, kann morgen schon zerstört sein. In diesem Umfeld der bleiernen Unsicherheit hilft nur die Klarheit einer Überzeugung für das eigene Tun. Bei Marc Walder ist dies der rote Faden, wie eres nennt, der Grundsatz, nur in transaktionsbasierte digitale Geschäfte mit hohen Transaktionsvolumina zu investieren… Marc Walder verfolgt also bei seinen Investments eine klare, opportunistisch entlang der Möglichkeiten getriebene Strategie, und doch bleibt die Erfolgsquote bei den anvisierten Deals immer volatil.“ (p.157)

“Er, urteilt Michael Ringier abschließend, sei aber überzeugt, dass «wir immer etwas Gedrucktes haben werden.» Michael Ringier betont, dass «das Digitale nie die Kraft und den Respekt erzeugen werde wie Print» es brauche zwingend die gedruckte Zeitung. Deshalb meint er abschließend, gehe es nicht darum, ausschließlich auf das Digitale zu fokussieren. Sondern aufzuzeigen, «wie sich auch der Print in Zukunft monetarisieren ließe.»“ (p.224)

Annex VI: ‘Ringier – building a digital-age media company’

Felix Oberholzer-Gee (September 10, 2012), Harvard Business Case Study

1. “While integrating its Blick newsrooms, Ringier also began to broaden its corporate scope. **Walder explained**: In the early 2000s, we mainly produced newspapers, magazines, and ran printing plants. Today, we are in the process of transforming ourselves into a completely diversified media company with three main sources of revenue: our core business, an entertainment division, and a portfolio of digital businesses. This change was triggered by the substantial difficulties in the market for newspapers and magazines. All traditional media companies are affected. The million-dollar question is how to gain sustainable profits from journalistic content in the future. We chose a diversification strategy. Beginning in late 2008, Ringier started to augment its core business – newspapers, magazines, and printing plants – by investing in entertainment (television, events, radio, and services) and digital businesses (classifieds, and e-commerce platforms).” (Oberholzer-Gee, 2012: 9; emphasis by DBK)
2. In the digital business arena, Ringier acquired Scout24.ch, the country’s leader in online classifieds for cars as well as real estate, Gate24.ch, an enterprise directory, and anibis.ch, a consumer classifieds platform. The publisher also pursued niche businesses in e-commerce such as Geschenkidee.ch, a site that helped consumers find and purchase gifts, Qualipet.ch, which offered pet supplies, and DeinDeal.ch, a daily deal site. “It is less obvious how these businesses are connected to our core,” **Walder conceded**, “but e-commerce is simply where the future is.” (Oberholzer-Gee, 2012: 9; emphasis by DBK)
3. Ringier’s overall diversification strategy, **Walder argued**, would produce significant advantages both for advertisers and talent: ”The marketing world has become very complicated. For managers, it is not easy to know where and how to invest. Our advantage is that we offer a broad array of marketing opportunities. We offer traditional print advertising, of course. But our clients can also sponsor a concert and even work directly with a famous singer thanks to our event management company and the in-house talent agency. And these kinds of engagements can be linked to radio, television, and e-commerce platforms. Similar opportunities exist on the talent side, where we offer a complete package as well. When Bon Jovi gave a concert in Zurich, we organized the event, sold the tickets, and we reported about the event in our newspapers, magazines, and on the radio. (Oberholzer-Gee, 2012: 9; emphasis by DBK)

4. By 2012, the entertainment division contributed 15% of sales in Switzerland. Digital made up a further 20%. The non-core portfolio of businesses included star performers such as Scout24 and Geschenkidee, whose profitability exceeded average group results. By contrast, return on sales remained modest by Ringier's standards for other entertainment and e-commerce businesses in the company's portfolio. (Oberholzer-Gee, 2012: 10)
5. As he contemplated Ringier's recent investments, **Walder remarked**: "Every media manager, editor-in-chief, and media consultant is asking the same questions: What is the future of newspapers? Will there be a print paper? What is the business model?" (Oberholzer-Gee, 2012: 11; emphasis by DBK)
6. Walder was proud of the progress that Ringier had made. But he readily conceded that he could not be sure about the ultimate success: "We analyze the likely outcomes, of course, but there is no guarantee. So, where do I get the confidence to make these kinds of decisions? **I trust Michael Ringier judgment**. And I am a good listener. I have good people around me. It is an attitude I admired in many of my peers who attended the Advanced Management Program at Harvard Business School. There is no wrong or right in these decisions. Paralysis is the real enemy. You have to move forward even if it is difficult. And you have to do it with humility, recognizing that you are not the smartest person in the room, **recognizing that you will learn and that you might have to change your mind**. (Oberholzer-Gee, 2012: 11; emphasis by DBK)

Annex VII: Qualitative content analysis

Structure

top-down *(independent variable)*

I do not want to sound egocentric. But within our executive board, I was the only one to drive this transformation strategy forward. (top-down; Walder, 2019a)

I really believe in hard-working and fast learning people. I once said at a conference: "fire fast and hire slow". I got quite a shitstorm because you are not supposed to say such things in public. But letting those people go who were not able to change, who didn't want to change, who were too slow has been essential to our success. (top-down; Walder, 2019a)

Where I think innovation needs to come from is at the very top. I think we as senior leadership still have to assume responsibility to do the right things. On a bigger scale. I also see us as evangelists that move forward and take everybody with us. I want us to stay young, fresh, smart and step into that learning curve. I really think the pressure should be on us as leaders. (top-down; Walder, 2019b)

A lot of know-how had to be recruited or purchased externally. This knowledge had to be integrated into the Group. This integration of new employees and companies leads to increased complexity and demand on internal alignment. (top-down; Cisullo, 2019)

Walder was proud of the progress that Ringier had made. But he readily conceded that he could not be sure about the ultimate success: "We analyze the likely outcomes, of course, but there is no guarantee. So, where do I get the confidence to make these kinds of decisions? **I trust Michael Ringier judgment**. And I am a good listener. I have good people around me… There is no wrong or right in these decisions. Paralysis is the real enemy. You have to move forward even if it is difficult. And you have to do it with humility, recognizing that you are not the smartest person in the room, **recognizing that you will learn and that you might have to change your mind**." (top-down; Oberholzer-Gee, 2012: 9, quoting Marc Walder; emphasis by DBK)

Structure and capabilities:

top-down; financial control *(independent variables)*

M&A was the focus. We were looking for good targets, for good opportunities. What's on the market? And just buy it. Mainly or often together with a partner. (top-down; financial control; Walder, 2019a)

We could have acquired Ticketcorner alone. But it is a technology game. We decided to go together with CTV Ticketing. Why? Because they had already at that time 200 engineers working on it. That helped us tremendously because we outsourced basically the technology heart, the backbone to Bremen (where today about 300 to 400 engineers work). We could never have done this alone for Ticketcorner. (top-down; financial control; Walder, 2019a)

I would say the very first step was the initial acquisition of Scout24 at a purchase price of around 170 million CHF in 2008. I started as CEO of Switzerland then and this kicked-started the digital transformation process. (top-down; financial control; Walder, 2019a)

One of the very first measures I took upon my appointment was to create an M&A Department. (top-down; financial control; Walder, 2019a)

I remember the very first meeting in 2008 when Ringier employees met Scout24 employees. The Ringier employees had no clue what they were talking about. How this business works. How this technology works. How these transactions work. How these pricing models work. Today, I think we are one of the top three investors in marketplaces in Europe. (top-down; financial control; Walder, 2019a)

Today, my role is much more strategic rather than physically scouting for opportunities, which was the case back in 2008. (top-down; financial control; Walder, 2019a)

Let's go back to 2008 when I was appointed CEO Switzerland and the digital transformation process started. Actually, in this room, Michael was sitting here, I was sitting there, Annette Ringier was sitting here, and Evelyn Lingg-Ringier was sitting there. The four of us, during this crucial meeting that lasted 90 minutes, we agreed that we will be taking risks and acquire new businesses. Probably marketplaces. (top-down; financial control; Walder, 2019a)

A lot of my friends said: You are nuts. You're going to ruin the family. You're going to spend too much money. You're taking too many risks. Big tickets, big bets. Indeed, we paid multiples of 16-18 times EBITDA, implying you need 15-17 years for payback. (top-down; financial control; Walder, 2019a)

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Then there is, of course, the digital part of the turnover that's not such an important KPI. Then there are a lot of digital transformation measurements, which are difficult to express in quantitative KPIs, I'm afraid. This is, in particular, true for the cultural dimension of digital transformation: the self-understanding of our employees, the sense of urgency, and, not least, the paranoia that I want to be implemented into the heads of all employees. (top-down; financial control; Walder, 2019a)

As Group CEO, it's important to be closely connected to all operating entities. That's why I myself sit on the board of directors of most joint ventures. (top-down; financial control; Walder, 2019a)

Then there is, of course, the digital part of the turnover that's not such an important KPI. Then there are a lot of digital transformation measurements, which are difficult to express in quantitative KPIs, I'm afraid. This is, in particular, true for the cultural dimension of digital transformation: the self-understanding of our employees, the sense of urgency, and, not least, the paranoia that I want to be implemented into the heads of all employees. (top-down; financial control; Walder, 2019a)

An essential question is: how do you prepare the agenda and its contents for the board of directors in such a way that both the board as well as senior management can get the most out of the board meetings? This process is important since the board cannot be expected to have in-depth knowledge of certain topics such as tech and data know-how. (top-down; financial control; Bassler, 2019)

The board of directors supported, pushed and challenged the transformation so that all these acquisitions could really be mastered. Furthermore, the network of the board of directors was important. The role of the board of directors has always been very, very good, challenging and supportive. When it comes to the volume of financing, courage is always part of the equation. (top-down; financial control; Bassler, 2019)

After we acquired Onet and JobCloud, we breached a credit covenant once, which was immediately solved by a waiver of the bank. In such moments, the strength of the team consisting of family, board of directors and management team shines through. (top-down; financial control; Bassler, 2019)

In data and tech, we had almost no people and today we have a strong team. Ringier has spent enormous financial resources on transformation and had to acquire many skills. (top-down; financial control; Bassler, 2019)

As we had no access to the details of Scout24, the due diligence was extremely difficult. In the end, it was Trüb as a visionary who had some insight and insisted, we should just do it. More gut feeling than due process. (top-down; financial control; Bassler, 2019)

During the 50 acquisitions we completed, a huge amount of transactional expertise was built. Not only in terms of confidence in negotiations but also in other areas. It started so slowly in 2008. Media Swiss (Scout24) was our first relevant investment in the whole transformation. Until then, we were a pure publishing house. (top-down; financial control; Bassler, 2019)

Onet is a good example: the real work started once we completed the acquisition. I don't know how many add-on acquisitions we had to make to get to where we are today with Onet. (top-down; financial control; Bassler, 2019)

'Where would we be now if we hadn't invested?' is an essential question. Upon reflection, one must conclude that the investments were absolutely necessary. Digital transformation was not a 'nice-to-have' but a 'must-have' change. Our company would lack nearly 80% of its EBITDA if we had not invested in digital businesses. (top-down; financial control; Bassler, 2019)

An important question is: ‘how do you enable that we can even manage at this speed of transformation and cope with its complexity?’ We are very successful in having international alignment teams. We have someone who can track down all the trends for the entire publishing process and drive forward projects in this particular area, for example. We have the same set-up for marketplaces as well as tech and data. (top-down; financial control; Bassler, 2019)

We have learned from KKR how to make companies financially fit: a business plan, roadmap, and milestones are clearly defined. If the roadmap is not adhered to, the essential question is how to realign resources and management focus. (top-down; financial control; Bassler, 2019)

We have a very open dialogue on the Board that colleagues always know how high our financial head room is still if we want to go to a ‘net debt to EBITDA’ multiple of x. And I have always communicated this clearly at the time of the budget as well as during the financial year. There are no surprises here. We focus on EBITDA and cash. (top-down; financial control; Bassler, 2019)

The transformation has brought a high degree of momentum to the company as reflected in the overall transactional activity (more than 50 acquisitions and divestments) as well as the mix and mindset of the employees. (top-down; financial control; Bassler, 2019)

As a company, you have to see how you can ensure that the operating cash flow from all our subsidiaries is sufficiently high so that we can afford the investment activities. (top-down; financial control; Bassler, 2019)

Within the entire group, I believe it is fair to say that the two people who have been crucial to stimulation are myself and Robin Lingg. All the important initiatives came from me. It’s absolutely me. 24/7. Besides that, I think Robin is somebody who is extremely pushy. At the top level, these are the main two stimulation drivers. (top-down; financial control; Walder, 2019b)

We have acquired fifty companies within ten years at a transaction volume of roughly CHF2 billion. (top-down; financial control; Walder, 2019b)

The alignment teams are for the exchange of best practices and the alignment of strategy, harmonization of technology issues or issues related to platforms - less for scouting companies. (top-down; financial control; Walder, 2019b)

The question of how Ringier could be described as a group led to intensive discussions. We are not a financial holding. And at the end, consensus emerged around ‘strategic media holding’. (top-down; financial control; Walder, 2019b)

I think we are very strategic…Then we look for solutions. Sometimes we need to develop them by ourselves and sometimes add-on acquisitions do the job. (top-down; financial control; Walder, 2019b)

One of the main KPIs is the digital part of the EBITDA. That’s what we measure at the end of the year. Ringier has done the transformation from zero EBITDA digital in 2011/2012 to 71 percent in 2018. So, within six years from zero to 71 percent. That is probably the most important KPI. (top-down; financial control; Walder, 2019a)

The transformation also required and consequently built up other competencies on the board. Following the acquisition of Onet, new governance structures such as new committees (e.g., risk, audit, nomination) were established. (top-down; financial control; zu Salm, 2019)

The financial dimension has certainly risen in importance as reflected in the composition of our board. (top-down; financial control; zu Salm, 2019)

The transformation process has been rather top-down driven so far. This enabled a high degree of flexibility and responsiveness but certainly also increased performance-dependency on a rather small group of decision-makers. (top-down; financial control; zu Salm, 2019)

Walder has been driving the transformation process with the strong backing of Michael Ringier, as representative of the controlling family. (top-down; financial control; zu Salm, 2019)

Ideation at the mid- and lower management level rarely reached the attention of the board. The next challenge is to integrate the bottom-up approach and establish it as an integral part of the corporate DNA. (top-down; financial control; zu Salm, 2019)

We continue working towards balancing a centralized top-down approach with more bottom-up input to match the requirements for an increasingly decentralized world. We are committed to continue improving the design of our strategic decision-making processes: top-down and bottom-up. (top-down; financial control; zu Salm, 2019)

Use the financing and operational governance expertise from a firm such as KKR. (top-down; financial control; zu Salm, 2019)

Onet challenged the organization from both a financing as well as a portfolio restructuring point of view. We paid a significant price for a valuable and important asset that instantly transformed Ringier into a technology-driven digital player. However, at the same time we had to seriously consider whether we can continue business-as-usual. Certain activities within the group had to be reconsidered and stopped. (top-down; financial control; zu Salm, 2019)

The acquisitions accelerated the transformation significantly. This acquisition-led strategy was relatively expensive. (top-down; financial control; zu Salm, 2019)

More importantly, it was Onet that set the company on a path of M&A that shaped Ringier's digital transformation. (top-down; financial control; zu Salm, 2019)

Business model innovation can be harder than product innovation. Acquiring digital classified markets - though adding a transactional model – is probably less business model innovation. But business model innovation will continue being an important focus of the next wave of strategic renewal. (top-down; financial control; zu Salm, 2019)

Onet was an important step in the digital development of the Ringier group and the acquisition of new capabilities. (top-down; financial control; Cisullo, 2019)

The board of directors has an advisory and questioning role, on the one hand to challenge the management and on the other hand to offer the family a good basis for decision-making (top-down; financial control; Cisullo, 2019)

Marc is the CEO who made this all happen. He took many risks but throughout he had the trust of the family. The family feels comfortable that Marc is the right guy. But Robin Lingg and others are equally important in driving the transformation. There is no cluster risk at all. Not at all. (top-down; financial control; Cisullo, 2019)

The main drivers behind the digital change were the acquisitions. The number of acquisitions (50) and the related financing (almost CHF 2 billion) summarizes the story. (top-down; financial control; Cisullo, 2019)

Well, first of all, Ringier has 105 participations. So, we can really call the Group a diversified company. It's very complicated and very challenging. Just think about budgeting. Just think about the consolidation process and then you know. (top-down; financial control; Cisullo, 2019)

We are not a start-up company. (top-down; financial control; Cisullo, 2019)

Now, beyond publishing and digital marketplaces, our challenge is to develop the third leg that can secure future growth. We have not found it. I doubt whether it can come from within the company as it has to be something radically different from what we do today. (top-down; financial control; Cisullo, 2019)

The initiator of the digital transformation was Trüb with Media Swiss (Scout24 Schweiz). This has strongly driven further expansion into various fields (Asia, Africa, digital). (top-down; financial control; Ringier, 2019)

In the course of the process, new competencies are always being developed in the board of directors. Loyalty, commitment and knowledge are connecting elements. The digitization of our business also required a change in the composition of the board of directors. Today we have new committees and new members, such as bankers. (top-down; financial control; Ringier, 2019)

Ringier will not wish to be listed as a holding company. Nevertheless, pragmatic scenarios are discussed where the IPO of a subsidiary might make sense. (top-down; financial control; Ringier, 2019)

We chose a diversification strategy. Beginning in late 2008, Ringier started to augment its core business – newspapers, magazines, and printing plants – by investing in entertainment (television, events, radio, and services) and digital businesses (classifieds, and e-commerce platforms)." (top-down; financial control; Oberholzer-Gee, 2012: 9)

The publisher also pursued niche businesses in e-commerce such as Geschenkidee.ch, a site that helped consumers find and purchase gifts, Qualipet.ch, which offered pet supplies, and DeinDeal.ch, a daily deal site. "It is less obvious how these businesses are connected to our core," Walder conceded, "but e-commerce is simply where the future is." (top-down; financial control; Oberholzer-Gee, 2012: 9)

Ringier's overall diversification strategy, Walder argued, would produce significant advantages both for advertisers and talent: "The marketing world has become very complicated. For managers, it is not easy to know where and how to invest. Our advantage is that we offer a broad array of marketing opportunities. We offer traditional print advertising, of course. But our clients can also sponsor a concert and even work directly with a famous singer thanks to our event management company and the in-house talent agency. And these kinds of engagements can be linked to radio, television, and e-commerce platforms. Similar opportunities exist on the talent side, where we offer a complete package as well." (top-down; financial control; Oberholzer-Gee, 2012: 9

Structure and capabilities:

top-down/bottom-up; financial vs. strategic control ***(independent variables)***

The decisions for important radical innovations and acquisitions have always been top-down. There are now incremental initiatives and acquisitions that are also bottom-up. (top-down/bottom-up; Bassler, 2019)

Trüb wrote 'Onet plus Jobs' on the note. Then there was the question of structure and financing. And we did exactly this: we acquired Onet and Jobs. After all, Onet and Jobs catapulted us into a whole new sphere. I think the triggers were the critically important acquisitions. They were always top-down. But you can already start seeing a slight change. We notice that bottom-up generated acquisition proposals start emerging. There are now incremental initiatives and acquisition proposals that are also bottom-up. (top-down/bottom-up; financial control; Bassler, 2019)

The increasing number of joint venture partners increases the complexity of overall management and financial management in particular. Keeping the balance between corporate standards and a certain entrepreneurial freedom is important. We focus on not overwhelming the acquired companies. (top-down/bottom-up; financial control; Bassler, 2019)

We have a sensational team, and I am an advocate of it. It is all about people. You have to see how you integrate them so that we can get the speed to handle this complexity. The international alignment teams are very successful in doing this. (top-down/bottom-up; financial control; Bassler, 2019)

Product and platform innovations must emerge from within the business. Top management must provide the direction while the rest of the organization must support the execution bottom-up. (top-down/bottom-up; Walder, 2019b)

Michael Ringier once said, when he looked into the room during a conference, out of around 100 top executives that were gathered in the room - he realized - 60 percent were new people - compared to only 4 years ago: 'That's great, because new talent inspires. They bring new dimensions. They bring us the new ideas. (top-down/bottom-up; Walder, 2019b)

I like to believe that during the past two years, in particular also with the appointment of Lukas Gähwiler, we have strengthened the effectiveness of our board. We critically review and question ourselves. Further, we reached out beyond the board-table to connect with the rest of the organization - beyond just the usual CEO information flow. (top-down/bottom-up; Cisullo, 2019)

Indeed, the traditional concept of the board getting together a few times a year, maybe some conference calls in-between, is not working any longer. Certainly not, if the board mandate is to fully assume its strategic responsibility, which is the law in Switzerland. (top-down/bottom-up; financial/strategic control; Cisullo, 2019)

To put a plain vanilla view on the table and to challenge the management on any given topic and situation is the role of the board of directors. The purpose of the board of directors is to develop a good basis for decision-making and to challenge the management, as well as to assess the situation in the most pressing areas. (top-down/bottom-up; Cisullo, 2019)

I will not put or pick a name of any particular person. The transformation has been a team effort. It is a whole ecosystem, within and outside the company. (top-down/bottom-up; Cisullo, 2019)

Identifying the right opportunities and executing them is more important than simply generating ideas. (top-down/bottom-up; financial/strategic control; Cisullo, 2019)

Good transformation never ends. (top-down/bottom-up; strategic control; Cisullo, 2019)

Well you know, I think everything has to do with motivation; with having the right people on the field. I think it is the responsibility of the senior management to motivate all team members and not make them feel like a guest of this journey. (top-down/bottom-up; strategic control; Cisullo, 2019)

We are currently building a new aircraft while flying the plane. Therefore, we always have to be able to think in two different ways: exploiting existing cash flow and exploring future sources of profitable growth. (top-down/bottom-up; financial/strategic control; Cisullo, 2019)

The fact that the transformation has been rather top-down and M&A driven has not compromised our in-house innovation capability. On the contrary, I would say that we have not only acquired so much digital talent but Ringier does a great job in empowering those people to drive innovation. (top-down/bottom-up; financial/strategic control; Cisullo, 2019)

In the publishing sector, more talent and competencies need to be brought in to take the next step. By implementing the newsroom (Blick etc.), Ringier achieved convergence of digital and print at an early stage. (top-down/bottom-up; Ringier, 2019)

M&A was necessary in order to acquire competencies. Before the transformation, there was simply no know-how in the digital field. Now the M&A approach is changing as innovation from within is gaining in importance. (top-down/bottom-up; financial/strategic control; Ringier, 2019)

This is our major learning. Always try to keep the acquired company's founder and/or management team on board for as long as possible - via an earn-out component, for example. Only this ensures know-how transfer and a sustainable continuity. (top-down/bottom-up; strategic control; Bassler, 2019)

For quite some time now, we have been in a certain status quo. Now we have to challenge ourselves to move to the next level. Without investments, digital business models will lose profitability. (financial/strategic control; Ringier, 2019)

The innovations that are emerging bottom-up are carried out directly by the relevant management resources. (top-down/bottom-up; strategic control; Cisullo, 2019)

We have a lot of innovation-centric thinking in terms of openness to new business opportunities. So out of a scale of ten, I would say that Ringier scores eight in most of the important fields relevant to digital transformation. (top-down/bottom-up; strategic control; Cisullo, 2019)

Digitization must be seen in a broader perspective than pure financial KPIs. It is about attitude, processes, efficiency and many other skills and aspects. It is a matter of mindset. (top-down/bottom-up; financial/strategic control; Cisullo, 2019)

At the end, acquiring digital businesses was critical for Ringier in terms of skills and brains, which understand digitalization and market needs. (top-down/bottom-up; financial/strategic control; Cisullo, 2019)

Cognition:
environmental enactment vs. adaptation ***(independent variable)***

I think we are fast and smart followers. I think we are extremely good at execution. We are extremely good at observing and analyzing the market environment. (adaptation; Walder, 2019a)

We completely fucked up, and now 80 percent of the digital advertising money is going straight to Google, Facebook, Amazon, and the likes. The media industry hasn't found an answer to that. That's 80 percent of the cake. We are all now focusing on data and data alliances. But it is very challenging to catch up on that front. We need to anticipate the next big wave rather than chasing the 'lost wave'. (enactment; Walder, 2019a)

Role models like Schibsted Media Group and Axel Springer gave us the confidence that our strategic orientation was the right one and helped us proactively identify potential opportunities. (adaptation; financial control; Bassler, 2019)

We are 'fast-followers' rather than first-line innovators. We spot relevant opportunities and we understand how to execute them. This is certainly an important core competence. Whether this is enough for the future remains to be seen. (adaptation; financial control; zu Salm, 2019)

Ringier is now trying to move from acquisition-driven change to the development of its own ideas. (enactment; Cisullo, 2019)

First you have to learn to walk before you can run. We learned how to run during the transformation. Now we have to make sure that we run faster than others. The future will show whether we are capable of doing this. (enactment; financial/strategic control; Cisullo, 2019)

In terms of innovation, Ringier is a fast follower in a global perspective. In Switzerland, Ringier is more a kind of pioneer. (adaptation; Cisullo, 2019)

Ownership structure:
family control *(control variable)*

An advantage is that we have a small committed family. A disadvantage is that we do not have as much pressure on our shoulders as is the case with a listed company. A family business like Ringier - closely aligned and fast decisions - is a tremendous advantage relative to a listed company. (family-control; Walder, 2019a)

The most important thing was a complete and close alignment between the family-shareholders, the board and me. We are a family company and at the end of the day, it's the family that decides. We have a strong board of directors. Theoretically, the family can always overrule the board. But to date they never did because the governance arrangement works well. This triangle of myself, the board and the family-shareholders laid the foundation for success. We were able to make decisions fast and often faster than competitors. At times, this was a critical competitive advantage in the M&A market. (family-control; top-down; financial control; Walder, 2019a)

The family was behind the M&A-based transformation. There was a high level of support in the area of decision-making. (family-control; financial-control; Bassler, 2019)

As a family business, you have other financial KPIs. We have a strong focus on the cash perspective. But there is no pressure in terms of public markets disclosure requirements. (family-control; financial control; Bassler, 2019)

The whole management was completely empowered by the Ringier family, which played such a fabulous, courageous role in this whole transformation process. (family-control; top-down/bottom-up; Bassler, 2019)

The family has provided strong support for the transformation in the first phase. The Ringier family still sees their identity strongly in publishing[254]. This dimension cannot

[254] "Traditional publishing opens doors and is the basis for building networks. This is often underestimated. That is why publishing is a very 'profitable' business model (not necessarily in a financial sense). But publishing positively supports the other business models." (Michael Ringier, 2019)

be underestimated in terms of decision-making boundaries. (family-control; zu Salm, 2019)

Ultimately, it's always a family decision. They represent the owners of the company and thus bear the responsibility. However, in order to make a decision, you need sound information and advice. This is a critical role the board can assume. (family-control; financial control; Cisullo, 2019)

With Michael Ringier, the leadership of the board has been rather consensus driven. We should question the core of our DNA and activities much harder and more critically. But, in the end, the board's strategic role is a matter of ownership structure: private/public or concentrated/distributed. (family control; top-down; financial control; Cisullo, 2019)

An acquisition was never made without the consensus of the entire family. (family control; financial control; Ringier, 2019)

At Ringier, people have a high priority. In particular, the constellation of the board of directors. (family-control; top-down; Ringier, 2019)

Environmental scarcity:

entropic erosion of traditional print business ***(control variable)***

Digital content or content on digital platforms was growing and growing - everything for free. That was the famous 'Geburtsfehler' [birth default]. It was clear that we had to move because we were sitting - to put it dramatically - on a sinking ship. (environmental scarcity; Walder, 2019a)

But our business was just too good until 2008 to look elsewhere for a profitable future. Certainly, in terms of P&L logic, there was no urgency. In Europe, 2007 was a great year for many media companies. 2008 was a great year. We were content-centric but understood to make money in a 'free-content' world, we must become transaction-based. Digital marketplaces were the obvious target model. (environmental scarcity; Walder, 2019a)

The entire media industry completely failed to understand Google and Facebook. Both companies had close to zero revenues 15 years ago. We were all joking especially about Facebook. We said: 'they have millions or billions of people on their platform, but they don't know how to make money'. I remember myself saying this sentence on several occasions. Today, Facebook has more than US$50 billion in turnover from advertising. (environmental scarcity; Walder, 2019a)

So, Facebook and Google, for example, took the money that was spent on media inventory. Data-driven advertising was their weapon. It's all about collecting the right data and distilling the relevant data insights. We, the entire media industry, had also huge audiences, millions of people coming day by day even several times per day to our platform. But we have completely missed and then fucked-up the leverage of data. (environmental scarcity; Walder, 2019a)

Walder always says: 'Whoever is not paranoid about the changing market environment should not be part of the global executive board (GEB). We have to move and develop fast.' (environmental scarcity; top-down; Bassler, 2019)

We saw in 2012 that print declined more sharply than we had expected in 2008, for example. In 2012, the sense of urgency was rising. (environmental scarcity; Bassler, 2019)

If one wants to assess the core profitability along the transformation process, then the picture is unmistakable: print declined too rapidly compared to the growing digital revenues to compensate for this decline. (environmental scarcity; financial control; Bassler, 2019)

The culture has also changed. From total relaxation in the company to positively tense nervousness. Today, the business can change permanently. From a rather stable business model - buying a new printer every 20 years - to a constantly changing business model, for example. (environmental scarcity; Ringier, 2019)

The stock market is partly responsible for destructive pressure, which - from the perspective of a rapidly changing media industry – leads to short-termism. Wrong decisions are the likely consequence. The stock market's short-term pressure for growth eventually can lead to unfavorable constellations in the long term. (environmental scarcity; strategic control; Ringier, 2019)

Our culture has also changed. From total relaxation in the company to positively tense nervousness. (environmental scarcity; top-down; Ringier, 2019)

"In the early 2000s, we mainly produced newspapers, magazines, and ran printing plants. Today, we are in the process of transforming ourselves into a completely diversified media company with three main sources of revenue: our core business, an entertainment division, and a portfolio of digital businesses. This change was triggered by the substantial difficulties in the market for newspapers and magazines. All traditional media companies are affected. The million-dollar question is how to gain sustainable profits from journalistic content in the future. (environmental scarcity; Oberholzer-Gee, 2012: 9; quoting Marc Walder)

"Every media manager, editor-in-chief, and media consultant is asking the same questions: What is the future of newspapers? Will there be a print paper? What is the business model?" (environmental scarcity) (environmental scarcity; Oberholzer-Gee, 2012: 9; quoting Marc Walder)

Appendix VIII: Engaged scholarship

> ***Engaged scholarship*** *is defined as a participative form of research for obtaining the different perspectives of key stakeholders (researchers, users, clients, sponsors, and practitioners) in studying complex problems. By involving others and leveraging their different kinds of knowledge, engaged scholarship can produce knowledge that is more penetrating and insightful than when scholars or practitioners work on the problems alone. Van de Ven (2007: 9; emphasis by DBK)*

Marc Walder and Annabella Bassler respond to final research propositions (January 29, 2020)

Annabella Bassler

"Considering the study's research period (2008-2015), it can be concluded that the transformation process has been rather top-down. It was primarily CEO-driven through M&A and joint-venturing and supported by a board of directors that has been predominantly concerned with financial control. In fact, funding has been a critical consideration in this transformation process. From a CFO perspective, a certain degree of top-down approach is essential, as in our case we have 125 companies within the Ringier-Group, of which 105 companies are consolidated. A top-down streamlining of processes is required.

However, after 2015 there were no more acquisitions with major impact on the direction of this transformation process. The acquisitions were more 'incrementally driven' and bottom-up generated. One example of this 'bottom-up' power within the Ringier-Group is our Tech&Data team, which is based in South Africa.

The 'bottom-up' power is continuously strengthened by different collaboration tools such as Slack. They allow each member to contribute, independently of its hierarchical position. This is essential for the Group and the top-leadership to pick up bottom-up signals through the proximity to resource markets such as clients, products, and technologies. This structure is not only established in Tech&Data but also in 'Media' and 'Marketplaces', the Group's two core business pillars.

Overall, I would say these organizational changes have not only empowered 'bottom-up' approaches but have changed the strategy process. I guess, more akin to a Free-Energy Governance framework where predictions from the top are continuously challenged and enriched by data input from the bottom. But this was definitely not the case until 2015. However, the period of transformative M&A was absolutely required to lay a foundation to build on in the first place. Without the top-down centric phase of 2008-2015, the Ringier-Group would not be, where it is today."

Marc Walder

"It was critical to strengthen as well the 'bottom-up' dimension of our organization.

Indeed, the period between 2008-2015 was rather wild, fast, courageous and opportunistic. It was strongly top-down and financial control driven, i.e., through external growth and innovation. There was no harmonization of processes. The acquired businesses were free to design their processes locally. As a result, the Group had during those years more of a 'financial' holding character than of an integrated operating Group of companies. This has definitely changed as a result of the alignment processes. Today, we are clearly strategically - rather than financially - oriented in our self-understanding and in our approach to business.

I would say at around 2016, the 'bottom-up' dimension started to complement our top-down leadership approach, reinforced by processes of Group-wide alignment. We have 140 media brands and 50 digital marketplaces within the Group. Today, most innovation is bottom-up driven and directly inspired by market signals.

We continue operating in a market environment that is rather discontinuous and keeps challenging entrenched business models. However, looking at our two core business pillars - (1) Media and (2) Marketplaces - I am not convinced that we need massive acquisitions to add a third pillar in order to grow. On the contrary, personally, I believe that we can double the value of the company by continuing leveraging our strong market positions in Media and Marketplaces. In both pillars, the opportunities are enormous to build value through adjunct service models. In Marketplaces, for example, we started expanding in financial services related to purchasing or insuring a home or a car. In the traditional media business, we start exploring with promising transaction-centric service models which are likely to transform the traditional publishing's business models and ecosystems.

So, as a very conclusive remark and also referring to Annabella's comments: during the first phase of transformation, 2008-2015, the criteria of Free-Energy Governance as described in the propositions of the research study were not fulfilled. But it was this phase that secured the firm's long-term survival. However, the Group-wide and bottom-up alignment and empowerment of bottom-up processes that followed after 2015 have been equally important to the sustainability of value creation and firm survival. It really depends on where you are in the firm's lifecycle. I would tend to agree that eventually, firm survival is critically dependent on the continuous and sustainable interaction of top-down and bottom-up processes. We feel well prepared for the 'third-phase' of transformation that we are about to enter."

Steve Case[255] discusses Free-Energy Governance's core propositions in an open-style interview (January 29, 2020)

"I tend to agree with many of the propositions of the Free-Energy Governance framework. Most importantly, I believe there is a need to take a fresh look at governance models, in light of the many challenges /opportunities of our times.

The various experiences I've had, ranging from starting America Online, to chairing a merged AOL/Time Warner, to backing entrepreneurs via Revolution, or by helping to oversee public institutions like the Smithsonian, lead me to conclude that governance cannot be viewed in a vacuum – what is appropriate really depends on the context in which you're operating. A "one size fits all" approach will likely be flawed. Rather, you need to finetune the governance for the specific circumstance, based on where the organization is in its life cycle, how the team is working and what changes might be needed to position the organization for the future, how the company or organization fits

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[255] **Steve Case** is one of America's best-known and most accomplished entrepreneurs, and a pioneer in making the Internet part of everyday life. He is also the author of the *New York Times* bestselling book, *The Third Wave: An Entrepreneur's Vision of the Future*.

In his role as Co-Founder, Chairman and CEO of Revolution, a Washington, D.C.-based investment firm, Steve partners with visionary entrepreneurs to build significant 'built to last' new businesses. The mission is to establish Revolution as the premier firm outside of Silicon Valley.

Steve's entrepreneurial career began in 1985 when he co-founded America Online (AOL). Under Steve's leadership, AOL became the world's largest and most valuable internet company, driving the worldwide adoption of a medium that has transformed business and society. AOL was the first internet company to go public and among the best performing stocks of the 1990s, delivering a 11,616% return to shareholders. At its peak, nearly half of internet users in the United States used AOL. In 2000, Steve negotiated the largest merger in business history, bringing together AOL and Time Warner in a transaction that gave AOL shareholders a majority stake in the combined company.

Steve's passion for helping entrepreneurs remains his driving force. He was the founding chair of the Startup America Partnership— an effort launched at the White House to accelerate high-growth entrepreneurship throughout the nation. Steve also was the founding co-chair of the National Advisory Council on Innovation & Entrepreneurship, and a member of President Obama's Council on Jobs and Competitiveness, where he chaired the subcommittee on entrepreneurship. In 2014, Steve was named a Presidential Ambassador for Global Entrepreneurship.

Steve is also Chairman of the Case Foundation, which he established with his wife Jean in 1997. Together the Cases have invested in hundreds of organizations, initiatives and partnerships with a focus on leveraging the Internet and entrepreneurial approaches to strengthen the social sector. In 2010, Steve and Jean joined The Giving Pledge and publicly reaffirmed their commitment to give away the majority of their wealth to philanthropic causes.

Steve is on the Board of Regents of the Smithsonian Institution in Washington, D.C., the world's largest museum, education, and research complex, with 19 museums and the National Zoo.

in a broader context (competition, technology, government, and other), what challenges you face and/or opportunities you're seeking to seize, etc. That assessment will likely lead to a sense of how "top down" vs "bottoms up" the governance should be, for the next chapter.

As an entrepreneur and a backer of entrepreneurs, I tend to prefer a more distributed "bottoms up" approach. But I've seen situations where stronger "top down" leadership is required. An example is the leadership Bob Iger has brought to Disney in recent years, pulling the entire company together to launch Disney+. He (and the board) concluded that Disney needed to control its streaming future and insisted that every division work together to ensure a successful launch of Disney+. By contrast, the merger of AOL and Time Warner was disappointing in part because it lacked a clear unified vision and failed to bring every division of the company together to build on its early lead in media, communications and Internet.

In other situations, driving in innovation down in the organization, to unleash a wave of experimentation and a culture of innovation can be transformative. Often the innovators just need resources and a champion, and to get the friction/bureaucracy removed, so they can launch new initiatives. In those instances, too much top down leadership could be stifling, and slow innovation.

And sometimes the best way to expand and grow is to not just rely on internal innovation, but to acquire compelling and compatible businesses. This leads to an M&A-centric effort, which likely does enable the company to expand more rapidly, but then there are integration issues to deal with. And you need to be careful to not let M&A become the only source of innovation and growth, as that too can stifle innovation in other parts of the company.

Yes, the world is more distributed and discontinuous, and that process will be accelerated by a whole range of new technologies. Overall, I tend to agree that invention and innovation are getting cheaper. However, while that may be true, in certain cases commercial scalability is still very expensive and in some cases is so complicated as a result of regulations that innovation is there but market scalability is impossible. This is increasingly true for healthcare, for example. Commercial scaling is very hard, even in a low-cost innovation environment.

It is tricky to find the right balance between top-down/bottom-up. Signals for transformative changes can often start at the bottom, because younger people may be more attuned to this. But in other instances, the leadership needs to come from the top, as people at lower levels may be too task-specific and miss the relevant signals.

The key takeaway for me is leadership and governance matters. Thomas Edison famously said, “vision without execution is hallucination” and I agree with that. You need vision to have a sense of where you want/need to go, but you can’t get there without strong execution, which ultimately comes down to people – and how they are led, managed and governed.”

Jan Ståhlberg[256] discusses Free-Energy Governance's core propositions in an open-style interview (February 14, 2020)

"From my perspective PE, and in particular EQT, for example, have always embraced governance as a critical driver of both performance and long-term value creation. Indeed, private equity should outperform public companies for a number of reasons: First, PE has more strategic freedom. PE practitioners constantly question the status quo. Public boards are more dedicated to what they have. They rarely question the existing business. Second, PE neutralize any potential conflicts of interest and build alignment of interests so that the collective power of all involved can be optimally leveraged for a long-term goal. Third, optimal capital allocation is a key value-driver. Public companies have more difficulty in convincing markets to over-capitalize for future growth opportunities or public boards are often reluctant to reduce capitalization to benefit from more efficient capital costs fearing a potential embarrassment asking for a capital injection even in a very unlikely negative scenario although that lower capitalization may be in the best interest of the shareholders . Fourth, at least at EQT, a paranoia-powered sense of urgency has always been part of the DNA.

In my personal experience, buying businesses directly from the founding entrepreneurs can be challenging for PE. Founders are typically obsessed with their business, in every detail. It is almost impossible to replace the Founder. Governance is typically very effective. But once you take out the Founder and introduce more professional structures, the organization can get paralyzed since the organization is not used to a traditional chain of command.

Yes, EQT has been an incredible success story. The original team was in a range of 26-34 years old when the firm started in the mid-1990s, supported by the Wallenberg family. The success of the Wallenberg family, which at the time was in its fifth generation and controlled a third of Sweden's stock market, comes really down to a long-term approach powered by a circular reasoning: what is good for society is good for the country, and this will be good for our companies and eventually our family. Society was always a central focus of all business decisions. In my view EQT's success cannot be separated from that background story. I believe EQT benefited hugely from the Wallenberg network. In my opinion, for PE to create substantial value, you must be

[256] **Jan Ståhlberg** is Founder of TRILL IMPACT, a buyout firm dedicated to impact investing. Jan is a former partner of EQT, a company he joined in 1995 as part of the initial team. During his tenure, until mid-2018, he held positions such as Vice Chairman, Deputy Managing Partner and Head of Mid-Market globally across Europe, US and Asia.

long-term focused. You must invest into structures, into a future that serves well beyond your typical 5-year PE investment horizon. Our competitive advantage in the PE industry was to develop an operations-focused industrial approach. Obviously, many large companies laughed at us because for them PE and long-term is a contradiction in itself.

I believe those founding roots have 'governed' EQT to this day. It is reflected in the organizational design and the firm's long-term orientation. EQT operated on the basis that 'everyone should know'. Everyone is informed in real-time about everything. Indeed, this may lead to an overload of information, but overall this is still more preferable than top-down filtering that may risk excluding potentially insightful stimuli and feedback.

How did we manage this: we allowed everyone in the firm to listen into the investment calls, for example. It was a brilliant move. While other PE firms cultivated 'closed doors', we embraced such openness as a major learning platform, training young professionals to understand our sense of urgency, paranoia, long-term focus and, not least, our principles. More importantly, we often benefited from insights we would have not accessed otherwise. Our organizational structure has never been cascaded. And, I believe, looking at some of the core propositions of Free-Energy Governance, this is Free-Energy Governance: connecting top and bottom in circular causality of sensemaking with the least friction and optimal response time.

Overall, I think as long as people are open-minded, the composition of the board is not the problem. Communication is everything. Value creation, in my experience, has been usually determined by a combination of the following governance imperatives:

First, you must start with a clear purpose and long-term goal. Prepare to invest for the long-term, and into structure. Second, you need to continuously question yourself. Paranoia is key. Third, team-decisions are critical. Create a culture that empowers and encourages people to contribute, to take decisions, and not to be risk-averse. Team-decisions are an optimal way to get the best out of everyone. Fourth, the organization must be open and transparent; no room for politics.

When I was running the global Mid-Market operations out of New York, I was known for 'walking around', cleaning tables and putting my coffee cup in the dishwasher. You cannot expect bottom-up stimuli reaching the top when the top is not reaching out to the bottom. And sometimes a simple walk through the office can make all the difference.

Listen humble and with respect. In summary, it really comes down to three things: communication, transparency, and respect.

Indeed, the world is discontinuous and increasingly distributed. Young people are an unpredictable force for change. I believe you call it enactment as part of the Free Energy Governance framework. You can enact your world and then things do not look that unpredictable. With Trill Impact, I am now dedicated to a megatrend, which I believe is about to accelerate and will fundamentally disrupt leading corporations: in terms of sustainability, a business has either a positive or negative footprint; a positive footprint will win hearts and minds and will eventually lower costs of capital.

Appendix IX: Formal approval for interview statements

The interviewees have explicitly in writing approved the use of the authorized interview statements (see Annexes IV and VIII):

Ringier
Annabella Bassler: November 4, 2019
Claudio Cisullo: October 21, 2019
Markus Hongler: May 29, 2019; February 25, 2020
Michael Ringier: October 23, 2019
Christine zu Salm: June 6, 2019; November 4, 2019
Marc Walder: November 4, 2019

Engaged Scholarship
Steve Case: February 5, 2020
Annabella Bassler: February 3, 2020
Jan Ståhlberg: February 15, 2020
Marc Walder: February 3, 2020

Curriculum Vitae

For more than 25 years, D. Bijan Khezri has been dedicated to business leadership, innovation, and corporate governance as CEO/Chairman, non-executive director, and investor across a range of sector-leading companies, public and private, in Germany, Switzerland, the UK, and USA.

He is the Founder and Chairman of KCRI (Khezri Capital Research International) AG in Zug, a family office, private equity investor and governance partner.

Bijan is Group-CEO, delegate board director, and part-owner of Zug-based Marquard Media Group AG, a leading international media company. He is a member of the Group Board of Directors of Zühlke AG, a global leader in innovation consultancy.

Bijan built the Equity Capital Markets technology practice of Paribas (now BNP Paribas) in London. Thereafter, for more than six years he was an investor and served as a member of the Supervisory Board of Jetter AG, a leader in real-time industrial automation solutions, where he led the company's IPO on the Frankfurt Stock Exchange (subsequently Jetter AG was acquired by Bucher Industries AG, Switzerland). As board director and investor of VPNet Technologies, a Silicon Valley-based pioneer of advanced VPN-based technologies, he prepared the grounds for its takeover by Avaya Inc (NYSE-listed). As Chief Executive and then as Executive Chairman, he led the restructuring of FTSE-100 technology conglomerate Baltimore Technologies Plc (London/NASDAQ) and its subsequent asset sale to Hewlett Packard and PwC, respectively. For more than six years Bijan served as member on the Group board of directors as well as Chairman of the US Advisory Board of Sportradar AG, the world's leading provider of sports data and analytics solutions.

Bijan studied law at Bonn University and graduated from the Institut de Hautes Etudes Internationales (University of Geneva). He has extensively published in the Wall Street Journal, the Financial Times and other leading publications for more than two decades. He is the book author of 'Generation Dubai: *Exit, Voice, and Loyalty'*. He was the Founder & Chairman of the European Youth Conference in the European Parliament.

Bijan Khezri is an approved individual of the Financial Conduct Authority in the United Kingdom.