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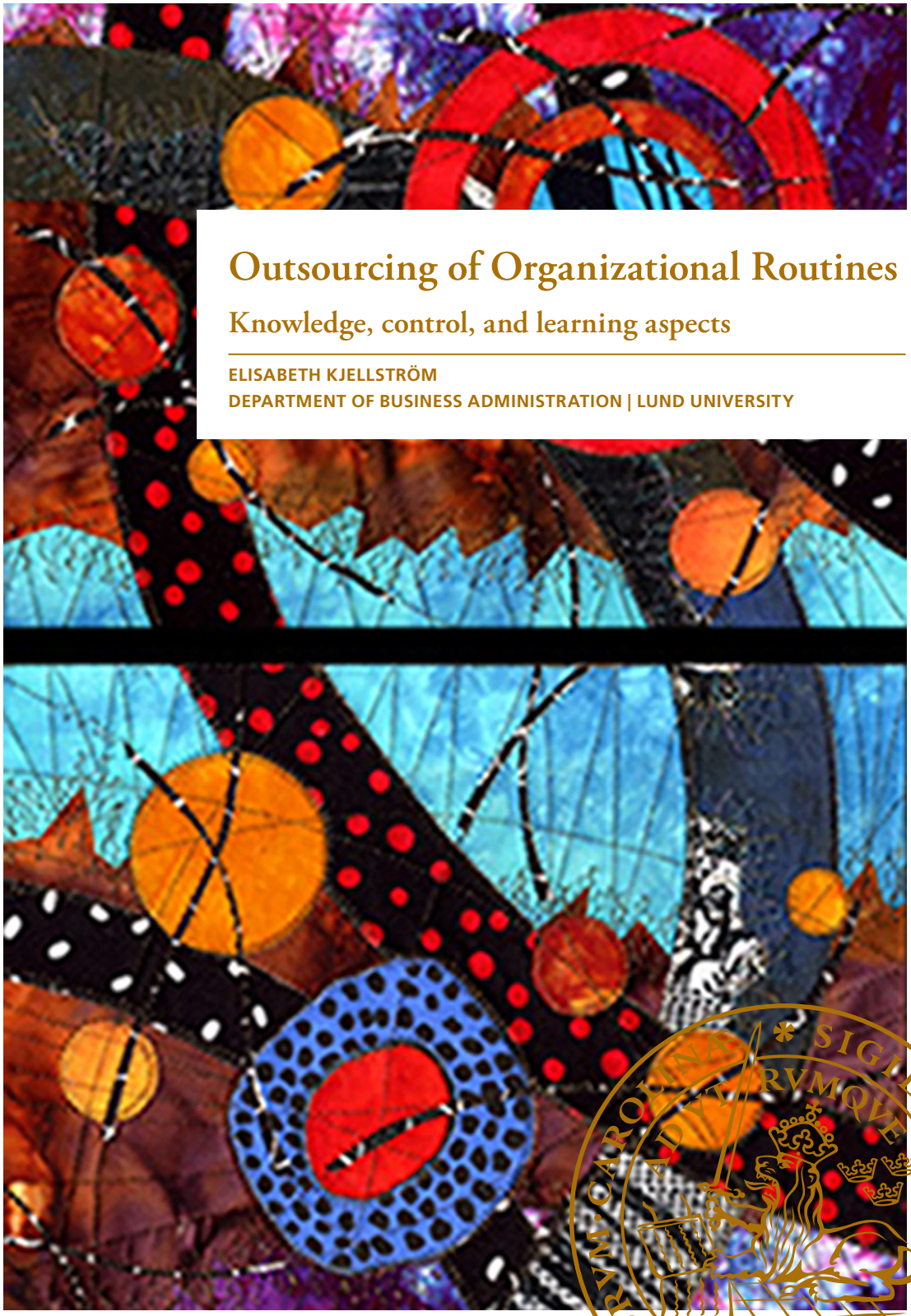

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Abstract

Organizational routines that are critical to learning, flexibility, and adaptation explain the behavior of the business organization. When organizational routines cross the boundary of the organization, variability and stability are affected. This study emphasizes organizational routines committed in specific outsourcing or insourcing situations to clarify the dynamics of organizational routines that are cut off and put out of context.

The theoretical analysis of organizational routines shows how three aspects of knowledge, control, and learning that are challenged by outsourcing or insourcing are able to explicate loss of organizational memory, loss of accountability, or loss of predictability over the business process. When organizational routines of an outsourced function are surgically removed, the organization is left with direct and indirect so called 'phantom limbs pain' that diminishes the effectiveness of the remaining activity system. Routines that are no longer in use result in reduced control and a weakened organizational memory, no longer updated for learning.

Earlier research has shown the complexity of organizational routines. The interpretation of social phenomena is never a straightforward activity. The multifaceted patterns of the phenomenon of organizational routines are difficult to study, directly observe, and therefore well suited for a hermeneutical approach.

The analysis emphasizes organizational boundaries and in particular control and accountability at lower organizational levels to present a new understanding of boundary management and the role of local knowledge as a link between internal and external systems in outsourcing processes. Knowledge does not necessarily erode when routines are outsourced if knowledgeable employees intervene and can regain knowledge. Concepts like tacit knowing, trading zone, and path dependency show how transfer of knowledge is possible when boundary spanning is organized in communities of practice.

Three different conventional industry cases illustrate the theoretical analysis of how boundaries of time and space are challenged and broken down both within and between organizations. The study has resulted in contributions to the different theoretical areas of organizational routines, knowledge management, control, organizational learning, and boundary management as well as some practical managerial advices.

Key words Organizational routines, knowledge, tacit knowing, control, learning, outsourcing

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Be thankful for challenges

> "The restless shadows … want to creep into the grain and turn to gold …" (Under Pressure: Tomas Tranströmer)

I would like to express my special appreciation to my supervisors Karin Jonnergård and Rikard Larsson. They have been a tremendous support and believed in my writings through all these years. Also, thanks for valuable feedback and comments from opponents and colleges and thanks to my dear teaching colleges and all students in different courses that contributed to an interesting environment during my professional time at Lund University.

The PhD thesis is based on an idea as old as my daughter is. This extended project has at times travelled through both deadlock and stalemates but also on sunny highways, and consequently the result is a complex but interesting and fruitful study.

I sincerely wish to express my gratitude to family, friends, and neighbours who kept asking about the thesis, but also to those who avoided asking me about the thesis every time we met. I would especially like to thank Lisbeth and Curt Wells for readings, dinners, and wine, Sarah Philipson for conceptual exchange, and Elisabeth Mattisson for her solid CFO competence. In addition, last but not least, a grand appreciation to my only daughter Siri who always believed I was 'the best to walk this earth'.

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Now, this provides us with a very good reason to join altogether for a fabulous celebration.

Lund, February 20, 2019

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1 Introduction

This theoretical research approach contributes to the organizational routine studies and elucidates the consequences of organizational behavior when organizational routines are transformed or broken, when they cross the boundary of the business organization due to outsourcing. Organizational routines are assumed to carry aspects of knowledge, to execute control, and to be a base for learning and change. This introductory chapter starts with a significant case as a background for presenting the organizational routines, the approach, the purpose, and the contributions of the study.

1.1 The Sun Story of Outsourcing

The Sun story is about insourcing an outsourced library (Hill, 1998). It is a story with a success ending, even though the sequence of events of outsourcing a library function indicates a complexity of activities, effects, and consequences that could be further analyzed in relation to organizational routines. Behind outsourced business functions, *i.e.*, previously performed in-house, there are organizational routines that relate to the organization's structure and technology to be further studied (Feldman, 2000; Labatut, 2012). The published article about SunLibrary (Hill, 1998) is used as an illustration to show the significance of organizational routines from different perspectives in outsourcing and insourcing.

Sun Microsystems Inc. is a Fortune 500 company, established in 1982, that designed and sold network computers in 150 countries (Tully, 1993, 1994, 1999). Sun has been mentioned in different articles to demonstrate a company's superior ability to survive the rigors of cost-based competition based on the philosophy to focus on core competencies and outsource the rest (Tully *et al.*, 1993). Sun's library function, discussed as SunLibrary, was initially performed in-house. Later, SunLibrary was operated as an outsourced library by Adecco, the international temporary placement agency, and finally it was insourced back to its parent company Sun.

The experience was told by the library manager Cynthia Hill (Hill, 1998). In the beginning of the story, SunLibrary, a unit of SunUniversity, was not considered a core competence of Sun even if it was involved in key market research projects with high visibility and high impact throughout Sun. Consequently, SunLibrary, being "… a conventional library, offering a core collection of services and materials, among them basic reference and an online catalog …" (Hill, 1998:46), was outsourced to Adecco.

Adecco, committed to provide services in line with what the longstanding client Sun demanded, hired a special library manager, Cynthia Hill, because Adecco had no earlier experiences of operating corporate libraries. In the article (Hill, 1998), Cynthia Hill introduces herself as interested in exploring how information could be effectively delivered to a worldwide enterprise through technology. She is curious about the viability of outsourcing and about the possibility of being "… a bridge between Sun, my client, and Adecco, my employer …" (Hill, 1998:26).

To provide the right level of service and staff for SunLibrary, a vision and management plan was created that took the bottom line and financial impact into account. The library evolved, research and literature searching functions developed, and new electronically delivered services were created and actively marketed.

> We also identified and licensed the appropriate web-based information services, delivering them worldwide to all Sun employees, and we increased our participation in the development of Sun's intranet. (Hill, 1998: 47)

Even if SunLibrary continued to develop, it could not fully use its capabilities. The explanation was that Sun, in order to comply with state and federal regulations for contract staff, had to establish procedures that defined and limited the scope of interaction between the regular Sun staff and the contracted staff: "… our status as contract employees kept a glass wall between us and Sun." (Hill, 1998: 46) As long as such non-removable 'glass walls' hindered SunLibrary to provide the right services the only solution seemed to be to convert the SunLibrary staff from outside outsourced status to inside insourced status. The directors of Sun were convinced that Sun would be better served by converting the SunLibrary staff to full-time, regular in-house staff. Some key decision points, like core competence, job performance, and financial impact, were specified. An investigation of the viability of insourcing was initiated to analyze the cost of keeping the library service outsourced *versus* insourced. The management fee was

not the only issue; the difficulties to get full value-added and the risks of losing staff to competitive business were also discussed among stakeholders.

> We have increased our research time available each day as we reduced or eliminated the time necessary to administrate the daily running of the department. As outsourced staff, we had to spend many hours on issues such as security (keeping our access to Sun open) and Information Resources support. As outsourced staff, every six months we had to complete a survey justifying our need to have access to Sun equipment and Sun's intranet. Since not all outsourced services need this access, Sun requires that it be regularly reviewed a time-consuming process to prevent unauthorized access to proprietary and confidential information. (Hill, 1998: 48)

The business value associated with both outsourcing and insourcing was in favor of insourcing. The transition was negotiated and SunLibrary was insourced back again to Sun:

> Indeed, after operating an outsourced library onsite for six years, last July the computer company Sun Microsystems convened the eight outsourced workers into full-time, regular staff. (Hill, 1998: 46)

However, the fact that SunLibrary staff at that point in time became Sun employees did not mean that the decision was irreversible, because Sun Microsystem continually reviews all services and organizational routines for its alignment to the parent organization (Hill, 1998).

The Sun story illustrates some preliminary ideas, used to identify what happens to organizational routines in outsourcing and insourcing. Outsourcing involves replacement of existing organizational routines. It involves transfer of knowledge, technology, management procedures, staff, and vital resources closely connected to the type of knowledge possessed by the personnel of the firm and the services obtainable from its material resources (Penrose, 1959/1995). Firms that outsource seems to renounce control over knowledge of how to perform and coordinate outsourced functions or activities that are built up by organizational routines. The knowledge base, the organizational memory of the firm, could also affect future learning.

1.2 Outsourcing Organizational Routines

The organizational routines are used to explain the inertial quality of organizational structure in evolutionary theories (Nelson and Winter, 1982). In the basic model of organizational evolution, the firm's 'repertoire of actions' is seen as quite limited, driven by relatively stable business processes that relate to routines and relate the organization to its environment (Cyert and March, 1963; March, 1981; Nelson and Winter, 1982).

Routines are difficult to study because they are a complex pattern between structure and action, i.e., between the organization as an object and organizing as a process of social action. Routines have become a cornerstone in theories of organizational learning and adaptation and reveal how the physical technology is involved in functions or activities but also how socially organized work is divided, managed, and coordinated (Becker, 2005). The practiced routines built into an organization define what the organization can do to accomplish a job (Nelson, 1991). Penrose's theory of the growth of the firm shows how collective resources are built up by learning by doing (Spender, 1996). Essential coordinating information is stored in the organizational routines and 'remembered by doing', which gives routines their constituting characteristics of 'persisting over time'. It implies that firms are "… expected to behave in the future according to routines they have employed in the past, given an organization in fully routine operating state." (Nelson and Winter, 1982: 134) On the other hand, "… routines are never entirely static, because with repetition routines can be constantly improved …" (Dosi *et al*., 1992: 192).

Organizational routines have a complexity with variations that indicate underlying phenomena and dynamics in structure and action (Feldman, 2000; Feldman and Rafaeli, 2002; Feldman and Pentland, 2003; Pentland and Feldman, 2005). The important distinction between resources and services made by Penrose is important when comparing organizational routines with services rendered and not with the physical resources that

> … can be defined independently of their use, while services cannot be so defined, the very word 'service' implying a function, an activity … Strictly speaking, it is never resources themselves that are the 'input' in the productive process, but only the services that the resources can render. (Penrose, 1959/1995: 24-25)

One way to examine organizational routines is to isolate and highlight certain organizational routines from all routines of a firm by emphasizing the routines that are committed in the specific outsourcing or insourcing situation.

Outsourcing leads to questions about how new behavior can emerge as a basis for dynamic capabilities (Teece *et al.*, 1997) showing competitive advantages that differentiate one company from the other (Porter, 1996). Organizational routines are thereby assumed to show new explanations of interest for this study when coping with different aspects of outsourcing and insourcing. Outsourcing[1] results in significant changes that affect the operational systems but also cut up, divest, de-centralize, or replace organizational relationships (Hendry, 1995; Allen and Chandrashekar, 2000; Freytag *et al.*, 2012). From a competence-based perspective outsourcing could be considered "… a matter of altering the *raison d'etre* of the firm, namely the corporate competence configuration." (Von Krogh and Roos, 1994: 176)

There are both direct and indirect negative effects when organizational units are divested, i.e., outsourced, such as reduced or missed knowledge transfer and a weakened organizational memory, no longer updated. "The phantom limb effect is the sum of both these negative effects." (Von Krogh and Roos, 1994: 176) When services and knowledge that reside inside the organizational routines are outsourced, managers often complain about loss of control over business processes, technologies, and work standards (Raiborn *et al.*, 2009). Several pitfalls have been recognized like loss of control of work standards, reduced employee innovation, higher-than-expected transaction costs, and loss of competence when functions are taken away from the organization (Bettis *et al.*, 1992; Hendry, 1995; Lei and Hitt, 1995; Greer *et al.*, 1999; Barthélemy, 2003; Langfield-Smith and Smith, 2003; Raiborn *et al.*, 2009; Holweg and Pil, 2012). Consequences of outsourcing and the development of outsourcing trends will be further discussed in relation to the various analyses of the different theoretical perspectives of the study.

Benefits of outsourcing include flexibility, access to the latest and most effective technology, methodologies, and practices (Raiborn *et al.,* 2009). However, even if an outsourcing company[2] achieves cost savings, cost restructuring, and manages

[1] *Outsourcing* is defined as contracting with a third service provider for the management and completion of a certain amount of work, for a specified length of time, cost, and level of service. *Offshoring* refers to the relocation of organizational activities to another country (Oshri *et al.*, 2009).

[2] In addition to *outsourcing company,* 'purchaser', 'procurer' and 'buyer' are used with the same meaning in the following chapters.

to take hold of an external provider's[3] technology and knowledge, different outsourcing studies have shown mixed results or even failed expected benefits (Hendry, 1995; Barthélemy, 2003; MacQueen, 2007; Freitag *et al.*, 2012; Courpasson *et al.*, 2016). Other authors directed their studies towards 'sun stories' telling about success companies gaining access to the best in 'the world know-how', looking at outsourcing as a means of achieving performance improvements in different areas of business (Lacity and Willcocks, 1995; Quinn, 1999, 2000; McIvor, 2008; Ford *et al.*, 2011).

Nevertheless, outsourcing is expected to result in significant changes that affect the operational systems but also cut up, divest, de-centralize, or replace organizational relationships with contractual ones (Hendry, 1995; Allen and Chandrashekar, 2000; Freytag *et al.*, 2012).

1.3 Studying Organizational Routines

The concept of organizational routine refers to "… a repetitive pattern of activity in an entire organization …" that is frequently applied with a decreasing need for conscious choices (Nelson and Winter, 1982: 97). Skilled human performance is automatic in the sense that most of the details are executed without conscious volition. Closely related to the concept of routine are the terms plan, script, habit, and program. Important is that Nelson and Winter (1982: 94) emphasize "… the *automaticity* of skillful behavior and the suppression of choice that this involves."

The concept of organizational routine also brings other questions about how skills[4] are learned, where knowledge is situated, and what happens when conditions change (Feldman, 2004; Becker *et al.*, 2005). It is said that the routinization of activity constitutes the general phenomena of organizational memory, in which the organization's specific operational knowledge is stored; in human heads, in procedures, in computer memories, and in production systems (Simon, 1991; Huber, 1996). Even if the routine operation of an organization is self-sustaining, the "… organization is not a perpetual motion machine; it is an open system that survives through some form of exchange with its environment." (Nelson and Winter, 1982: 113) The idea is that organizations remember routines

[3] In addition to *provider*, 'supplier', 'vendor' and 'sub-contractor' are used with the same meaning in the following chapters.

[4] *Skills* intend "… a capability for a smooth sequence of coordinated behavior that is ordinarily effective relative to its objective." (Nelson and Winter, 1982: 73)

by exercising them and not just by keeping them assured through written records. It requires that all members continue to 'know their jobs' defined by the routines that call for performance through receiving and interpreting flows of communication (Nelson and Winter, 1982: 100).

The organizational routines survive the individual actor. They are, thus, able to uphold and transmit organizational memory, into which both control and knowledge have been built, representing the experiences and actions that have appeared to be successful in the past, and will approximate future learning (Nelson and Winter, 1982; Lazaric, 2011; Miller *et al.*, 2014).

The organizational routine can be compared a jewel, in the sense that it has sides or facets and can, like most objects and ideas, be seen in different ways depending on which facet you are looking at. The examination of the nature of the routine depends on the aspect, i.e., the facet that is found important.

In this study, to be able to present the complexity of the organizational routine, three facets are chosen. The aspects of knowledge, control, and learning are elucidated as three states of ideas that give life to the organizational routine. These three aspects of knowledge, control and learning are assumed to cope alone with the engagement of organizational routines. Other aspects like competence, capabilities, culture, trust, structure, or authority have been discussed during the elaboration of aspects and found possible to cover with the chosen aspects and their intersections. However, the three aspects were understood as the relevant resources rendering simultaneous services as lever of performance presuming 'Penrosean businessman', who believes that there is 'always more to know' about the resources of the firm (Penrose, 1959/1995).

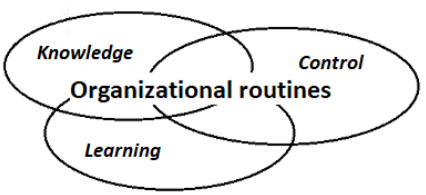

Figure 1.1 The three aspects of knowledge, control, and learning

The first aspect to be revealed is knowledge of the firm seen as embedded in the organizational routines, like technological knowledge, explicit knowledge stored

in documents or computer files, and tacit knowing[5] of the employees. According to the evolutionary approach, knowledge is the drivers of most activities and changes (March, 1981), but also the result of organizational learning that builds and changes the routines (Winter, 1996).

Control is chosen as the second aspect to be discussed in the light of actors and objects to be controlled, where structure *per se* is seen a control mechanism (Otley *et al*., 1995). Control of performance implies coordination and communication of knowledge in the firm as well as a certain way of determining the prospective for learning.

Learning is chosen as the third aspect to reach the changes and modifications of routines due to new knowledge, to experiences, or to evaluation of outcome and planning. Working with prediction and control of organizational capabilities and resources was seen as a path-dependent process that generates knowledge (Loasby, 1999), presuming the firm builds new knowledge around its recurrent operating routines through combination and exchange (Cyert and March, 1963; Nelson and Winter, 1982; Rathe and Witt, 2001). The learning perspective indicates the dynamics of organizational routines.

Three theoretical perspectives of knowledge management, management control, and organizational learning are elaborated to be able to do an in-depth interpretation from different theoretical perspectives. To consider a perspective is to choose a frame of reference and use its point of view. These theoretical perspectives are three choices of context, from which to determine and form a coherent belief about the organizational routines. The theoretical perspectives were considered to cover different aspects connected to the three chosen aspects.

The first perspective, the knowledge management perspective, is emphasized because the knowledge aspect is assumed to be an important lever of performance. The knowledge aspect of the organizational routine links the organizational routine to the specific performance of knowledge in the business organization, where the search for knowledge is seen as part of the normal operation of the firm (Penrose, 1959/1995; Nelson and Winter, 1982).

The second perspective, the management control perspective, is used to show how the control aspect of the formal, information-based routines that help managers maintain or alter patterns in organizational activities to deliver key results and

[5] The structure of tacit knowing is similar to that of knowing a skill. The expression 'tacit knowing' is used for tacit/implicit knowledge because understanding is tacit according to Polanyi (1962: 605).

adapt to the environment (Simons, 1987, 1995; Merchant and Otley, 2007). "Control lapses may be the cause or effect of memory lapses" (Nelson and Winter, 1982: 115) that emanate from values and norms in the organization with "… the power to control and direct each bit of work in the organization" (Itami, 1987: 23).

The third perspective, the organizational learning perspective, is strongly connected to the learning aspect that emphasize the need to fit new information into existing knowledge and contribute to the development of the firm (Macdonald, 1995). The absorption of new skills and capabilities is assumed to depend heavily on firm-specific characteristics and embedded knowledge, limited to a routine-based, history-dependent, and target-oriented view (Cohen and Levinthal, 1990). It is proposed that "… success at the innovative frontier may depend on the quality of the support from the 'civilized' regions of established routine" (Nelson and Winter, 1982: 131). Established routines cover the operational knowledge of the firm and have an influence over the development of new routines.

1.4 The Research Project

The initial examination of organizational routine theory starts the analysis of whether and how conceptual and physical routines could be recombined or replaced when changes transform or break organizational routines that cross the boundaries of the organization due to outsourcing or insourcing.

Knowledge is assumed to be cut off from the organization's established control system when exposed to outsourcing, whereby, the organization eventually is left with 'phantom limbs pain'[6], emanating out of the daily routine activities. Having in mind 'the slippery concept of knowledge' (Penrose, 1959/1995), the approach is to let outsourcing serve as a limit for the organizational routines under study and to look at organizational routines when they are *de facto* absent, e.g., outsourced. In so doing, outsourcing provides us with a finite area of organizational routines marked off by a loss of knowledge, and a loss of control over business processes, implying even a potential loss of learning options.

[6] Phantom ultimately from Greek phantasma, compare fantasy and apparition. 'Phantom limb syndrome' was first described in 1552 by French surgeon Ambroise Paré, who operated on wounded soldiers and wrote about patients who complained of pain in amputated limbs (https://www.britannica.com/science/phantom-limb-syndrome).

The resource-based, evolutionary perspective yields important insights in the variability and stability of the organizational routines (Nelson and Winter, 1982; Mahnke, 2001). The theoretical analysis will develop the importance of the three aspects of knowledge, control, and learning for changes in the organizational structure and its boundaries. Earlier research has focused on organizations' stabilizing processes and structural properties (Cohen and Bacdayan, 1996; Becker, 2004; Felin and Foss, 2004). However, the focus is on shifts in organizational routines, when challenged by structural changes, like outsourcing and insourcing (Brege *et al.,* 2010), to show how lessons of experience are accumulated within organizational routines and how they are recorded and shared in the organization (Levitt and March, 1996). Unpacking the structure and dynamics of the organizational routine (Feldman and Pentland, 2003; Pentland *et al.*, 2012; Feldman *et al.*, 2016) will make it possible to reflect on organizational routines involved in outsourcing and insourcing and on the presumed role they play as container of knowledge, executer of control and bearer of learning.

In the attempt to unfold changes in the organizational routines, the question of influencing, designing, and managing the organizational routines is the "… need to understand internal dynamics of routines is particularly strong …" (Pentland and Feldman, 2005: 793).

When a function, a process, or an activity built up by organizational routines is outsourced, the question is whether the organization still is in control of knowledge deployment as a base for learning. Organizational routines of a function that are no longer in use may erode, because coordination of what happens outside the boundary of the organization in time and distance is difficult for management to control.

1.5 Purpose and Contribution

This study is grounded in discussions on "…organizations that are engaged in the provision of goods and services for some outside clientele … business firms, concerned with survival and profits …" (Nelson and Winter, 1982: 96). The focus on organizational routines as an organizational phenomenon relates to large and complex organizations, where it is impossible for top management to direct or observe details of the organization.

The purpose of this study is to clarify the dynamics of organizational routines, crossing the boundary of a business organization due to outsourcing, to learn about the loss of organizational memory, accountability, and predictability, when organizational routines are cut off and put out of context.

The contribution of the theoretical study is to explain how organizational routines can give a coherent view of the firm's repertoire of actions. In employing all three aspects of knowledge, control, and learning, and the corresponding theoretical perspectives of knowledge management, management control, and organizational learning. It is further possible to develop three relevant intersections of organizational memory, accountability, and predictability that are affected by the boundaries of an organization involved in outsourcing and insourcing.

1.6 Approaching the Study

The hermeneutical approach is chosen in this study. The organizational routines are well suited for a hermeneutical approach because the interpretation of social phenomena is never a straightforward activity. Through the hermeneutical approach, it is possible to analyze organizational routines that are characterized of ambiguity and conflicts (Butler, 1998; Zimmermann, 2015). Unlike other concrete research subjects, organizational routines are observed as texts or behaviors that they give rise to (Johansson and Siverbo, 2009: 150). In this study, importance has been assigned to discourses on organizational routines to understand how the whole of the organizational routine is reached by examining the parts, the different aspects of knowledge, control, and learning, inherent in organizational routines.

The organizational routine as the phenomenon of this study is presented in different distinct hermeneutic arcs following Ricoeur (1988, 1991). In the first hermeneutic arc, the organizational routines and the three different aspects of knowledge, control, and learning are chosen using works from the three theoretical perspectives of knowledge management, management control and organizational learning to expand the interpreter's horizon from the initial pre-understandings (Ghasemi *et al.*, 2011).

In a second hermeneutic arc, the three different aspects of the organizational routine are the base for the relevant auxiliary intersections for which the following

concepts of organizational memory, accountability, and predictability are developed and analyzed.

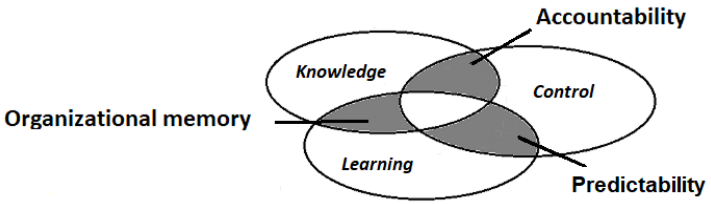

Figure 1.2 The auxiliary intersections

The 'organizational memory' is the intersection between knowledge and learning and assumes to carry both history and innovative frontiers (Nelson and Winter, 1982). The aspect of learning is important, because it indicates a change in the organization that occurs as the organization acquires experiences, where knowledge is the outcome (Argote and Miron-Spector, 2011).

The intersection between the aspects of knowledge and control is analyzed as a mechanism of 'accountability'. Learning indicates dynamics, and as such expected to be in opposition to the control aspect 'imposing the routine's order' (Nelson and Winter, 1982: 113).

The complex intersection between control and learning is analyzed as 'predictability' and emphasizes that "… balancing control and learning is critical to managing the tension between efficiency and innovation" (Simons, 1995: 21).

The boundaries and the boundary structure of the organization are further analyzed to interpret the outsourcing and insourcing activities that provide a loss of organizational routines. Crossing of a boundary of the organization indicates a change, a potential loss of organizational memory, accountability, and predictability that will be further developed and analyzed as the antonyms of amnesia, discharge, and unforeseeability, respectively.

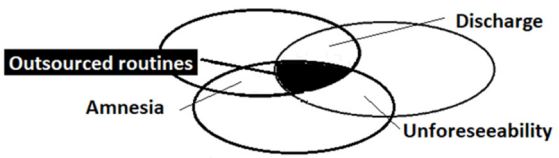

Figure 1.3 Consequences of outsourced organizational routines

Finally, in order to narrow down the hermeneutic arcs instead of having them spiraling out of control, the theoretical interpretation of the organizational routines must encounter the specific and will do so in form of practical outsourcing and insourcing evidences used to illustrate the consequences of outsourced organizational routines crossing the boundaries of an organization.

How the hermeneutical approach is applied will be described in Chapter 2.

1.7 Demarcations

A process of vertical disintegration like outsourcing regards scope, speed, and switching costs, when suppliers take over activities that were previously performed in-house (Mahnke, 2001). Most analysis is done from the suppliers' point of view, but also, on processes of backsourcing and on outsourced activities as SunLibrary illustrates. However, such analysis does not need to consider industry level, trade and travel restrictions, differences in regulative practices, or differences in social, cultural, religious, and political orientations. The different market conditions under which an organization manages the economic exchange externally in markets (McIvor, 2008) are not the focus of this study.

The organizational routines that are the focus of this study require attention on the capacity of the organization to generate and transfer knowledge, control, and learning. Organizations are thereby seen as "… substitutes for structuring efficient transactions when markets fail; they possess unique advantages for governing certain kinds of economic activities through a logic that is very different from that of a market …" (Ghoshal and Moran, 1996: 13). The resource-based view also looks at the internal processes. The organizational routines presuppose that the organization outsources when it lacks the necessary capabilities that may be conveniently reached at the market (Barney, 1999).

The organizational routines are not examined in contractual transactions, as suggested by Williamson (1993: 109): "The transaction cost economics insists that the process features of the organization be examined in the context of specific contractual relationships." Outsourcing studies often use transactions cost economics, but as expressed by Coase, this has

> … led to or encouraged an undue emphasis on the role of the firm as a purchaser of the services of factors of production and on the choice of the contractual arrangements which it makes with them. As a consequence of this concentration on the firm as a purchaser of the inputs it uses, economists have tended to neglect the main activity of a firm, running a business. (Coase, 1988: 37-38 in Ghoshal and Moran, 1996)

Therefore, in this study, transactions crossing the boundaries of the firm are seen as issues that organizational routines must solve (Winter, 1993: 192). Here, the evolutionary economics is used to offer refinement to the transaction cost economics (TCE). The evolutionary view favors the going concern in establishing routines, while TCE fails to recognize the path-dependent nature of the evolving institutional framework like organizational routines and internal coordination. The evolutionary view shows a dynamic approach to changes contrary to TCE that is said to be 'bad for praxis' and presents firms without a historical picture and complexity (Nelson and Winter, 1982; Ghoshal and Moran, 1996; Chen, 2007). TCE is a static approach that lacks to pay attention to gradual developments through the interaction of actors (Vosselman and Van der Meer-Kooistra, 2006).

The resource-based and the evolutionary perspective are considered relevant to business process outsourcing if important insights into the variability and stability of the organizational routines are to be found (Nelson and Winter, 1982; Mahnke, 2001). When a function, a process, or an activity built up by organizational routines is outsourced, it is assumed that organizational routines that carry knowledge and control, and are the base for learning and change, get transformed or broken. The coordination of what happens outside the boundary of the organization in time and distance is assumed difficult for management to control in outsourcing relations.

1.8 Outline of the study

The following outline summarizes the content of the different chapters to give an overview of the structure of the thesis.

- *Chapter 1* introduced this research project on organizational routines, as well as the approach, the purpose, and the contributions. The theoretical research approach contributes to the organizational routine studies and

elucidates the consequences of organizational behavior when organizational routines are supposed to be transformed or broken, in crossing the boundary of the business organization due to outsourcing. It is argued that the study is well suited for a hermeneutical approach.

- *Chapter 2* will present the hermeneutical method as two distinct hermeneutic arcs following the reading and re-reading of scientific texts (Ricoeur, 1988, 1991). The first hermeneutic arc moves from understanding to explanation, assigning importance to the three aspects of knowledge, control, and learning, as well as the corresponding theoretical perspectives. The second hermeneutic arc conceptualizes and elaborates the intersections between the three theoretical perspectives. This is confronted with the hermeneutical suspicion that the boundary of the organization contributes to changed perspectives due to the impact of outsourcing. Finally, the hermeneutic arcs are narrowed down, and interpretations meet practical evidences as illustrations.
- *Chapter 3* focuses on the employed organizational routines that are claimed to explain the behavior of the firm (Nelson and Winter, 1982). Organizational routines are developed in different theoretical studies starting with the evolutionary view (Nelson and Winter, 1982). The characteristics of the organizational routines as both stable routines and as a source of change will be explained and summarized in three 'waves' of routine research. Especially, shifts and disruption of organizational routines crossing boundaries will be elaborated in accordance with the three chosen aspects of knowledge, control, and learning and the corresponding theoretical perspectives.
- *Chapter 4* highlights the theoretical perspective of knowledge management. This perspective proposes that knowledge and work by human agencies found in organizational routines are an important lever of performance. It deals with how to coordinate individual and functional competence bound to the organizational routines that build up the capabilities of the organization. The concept of knowledge and knowledge management is discussed. Finally, the organizational routine is interpreted from a critical 'is-not' perspective, showing how it may lose value when transferred and outsourced from the original settings.
- *Chapter 5* emphasizes the theoretical perspective of management control that regulates and controls transactions and boundaries of the firms. This perspective elucidates the concept of control and the control aspect of the

organizational routines. In the examination, control is assumed to be the aspect that determines what can occur, how it is carried out in a regular, predictable, and stable manner, and who is accountable.

- *Chapter 6* elaborates the theoretical perspective of organizational learning that presupposes a routine-based, history-dependent, and target oriented view according to the behavioral studies of the organization, indicating that organizations learn by encoding history into routines that guide behavior. It involves both the discarding of obsolete knowledge and the acquiring of new knowledge that might have consequences for outsourcing. To understand the consequences of outsourcing and insourcing, it is important to look at how organizational routines might change due to acquired new knowledge, experiences in communities of practice, or modification due to evaluation of outcome.
- *Chapter 7* interprets the three aspects of knowledge, control, and learning in terms of intersections conceptualized as organizational memory, accountability, and predictability. Knowledge is stored in and carried by the organizational memory, out of which it can be activated and be connected to learning. Knowledge and control are assumed to be intertwined in centers of accountability. Learning is also connected to control corresponding to stability and predictability. The dynamics of these intersections helps interpret the transfer and the transformation of organizational routines crossing the boundaries of a business organization.
- *Chapter 8* further discusses the boundary and the boundary structure of the organization to interpret the organizational routine off context and outside boundaries due to outsourcing. It requires boundary creation of structures and processes. The capacity to handle organizational routines out of context might thereby undergo changes, not predicted, or reasonably expected. The focus of the analysis is on negotiating perspectives and trade-offs across boundaries to cope with amnesia, discharge, and unforeseeability, pushing the interpretation to its limit by going outside the boundaries.
- *Chapter 9* illustrates the theoretical analysis of the different perspectives on organizational routines using practical evidences due to outsourcing. The trends of outsourcing research are the base for this discussion. It is illustrated how the decision to outsource parts of the activities of the company Sandvik Crushing and Screening affects internal activities.

Organizational memory, accountability, and predictability undergo changes when encountering outsourcing. The evidences are given by interviewed managers. The focus is on negotiating trade-offs across boundaries to cope with amnesia, discharge, and unforeseeability to find interdependencies, when examining the knowledge, control, and learning aspects.

- *Chapter 10* illustrates more practical evidence on how organizational routines are cut off and put out of context due to outsourcing and insourcing. The trends of business process outsourcing research are the base for the discussion highlighting management accounting and controlling systems. Also, the decision of the company Assemblin to outsource parts of its activities had effects on memory, accountability, and predictability. Evidence of such changes is given by the CFO that has been employed during 17 years of the company's history. The focus is on negotiating trade-offs across boundaries to be able to find interdependencies when examining knowledge, control, and learning aspects of organizational routines.
- *Chapter 11* highlights the importance of understanding organizational routines in outsourcing and insourcing situations. In outsourcing, organizational routines are removed and the organization is left with lost routine interactions that could diminish the effectiveness of remaining activity systems. In insourcing the organization must prepare for the insertion of changed organizational routines. The theoretical contributions are elaborated together with the theoretical analysis in the study. Comparison with the three cases results also in practical implications for the firms' repertoire of action in outsourcing and in two potential projects for future research.

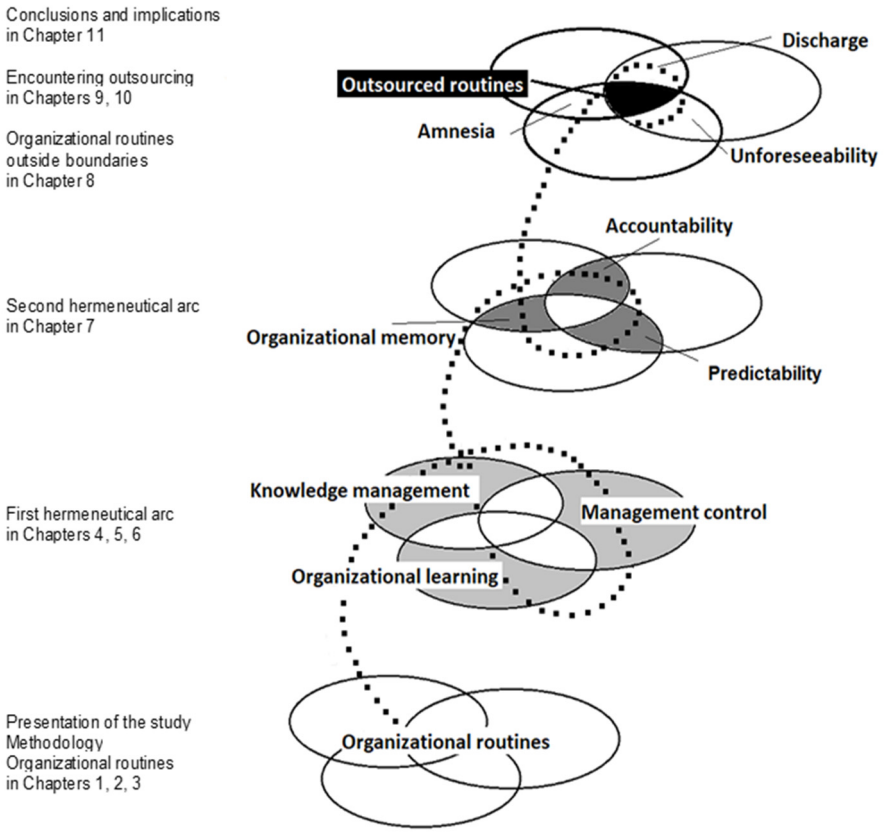

Figure 1.4 Representation of the research process in terms of the hermeneutic arcs of interpretation and understanding

2 Methodological Approach

The hermeneutical interpretation advances the understandings of organizational routines based on the research problem and the interpreted sources. The pre-understandings of the interpreter are described as a part of the interpretation process. The hermeneutical tradition according to Ricoeur is explained and thereafter applied to the study, based on the assumption that organizational routines are transformed or broken when crossing the boundary of the organization. The organizational routine is analyzed by examining the inherent parts, i.e., the different aspects of knowledge, control, and learning.

2.1 The Hermeneutical Approach

The hermeneutical approach is chosen in this study. The phenomenon of organizational routines is well suited for a hermeneutical approach because the interpretation of social phenomena is never a straight-forward activity. Organizational routines cannot be observed, only the artefacts, e.g. texts and behaviors that they give rise to (Johansson and Siverbo, 2009: 150). In organizational routines substance and meaning are bound together. The hermeneutical approach offers an understanding of the symbolic character of the organizational routines, which is recognized as the services that resources render (Penrose, 1959/1995). According to Ricœur, the aim of hermeneutics is to recover and restore the meaning depending on that the reality is reliant on the observer and thus ambiguous and relative. The hermeneutical perspective is found in studies by academics and managers, whose concerns are guided primarily by a cognitive interest in prediction and control (Willmott, 1997).

In this study, importance has been assigned to theoretical discourses on organizational routines to understand how the whole of the organizational routine is reached by examining the inherent parts, i.e., the different aspects of knowledge, control, and learning. Following Ricoeur's hermeneutics (1991), scientific texts on organizational routines are considered easier to grasp than the great quantity

of questions emerging out of the praxis of organizational routines. According to the hermeneutical view, the text takes the place of a 'live' discourse combining the world of text with the world of the reader (Ricoeur, 1981; Ghasemi *et al.*, 2011). Ricoeur (1991) shows how the task of reading is to interpret and fulfil the text according to its significance in the reader's world-view. Reading involves interpretation and re-contextualizing the text (Farooq, 2018). The reader, the phenomena, the context, and the research approach are intertwined especially when dealing with different theoretical perspectives (Covaleski and Dirsmith, 1990).

The focus on texts makes the hermeneutical approach similar to text analysis or discourse analysis. Text analysis, however, often focuses on the content of the single text in order to make categorizations of concept and their interpretation. Critical discourse analysis with a three-dimensional framework developed by Norman Fairclough at Lancaster school of linguistics maps text, discourse practice, sociocultural practice, and investigates how network of discourses are formed and applied on different societal levels (Chouliaraki and Fairclough, 2010). Unlike these approaches, the purpose of this study is to 'clarify the dynamics of organizational routines' and has no intention to cover the industry level, trade and travel restrictions, or differences in social, cultural, religious, and political orientations.

In order to expand knowledge and perception, the interpreter must recognize the potentially active role in the research setting, and continually self-reflect upon it. Meaning is construed not just according to the author's world-view but also according to its significance in the reader's world-view. Covaleski and Dirsmith (1990) found that the researcher, the phenomena studied, the context in which they are studied, and the research approach in use, are intimately intertwined. This condition should not be tacitly ignored. Ricoeur's theory of interpretation acknowledges the interrelationship between the assumptions made from the interpretation and that which is already known in the pre-understandings of the interpreter in order to expand knowledge and reach a deeper understanding. The process of hermeneutics is a reflective task. The emphasis is not on the external meaning, but the meaning or insight of the self which is gained through encountering the external text.

2.2 Pre-understandings

The researcher's interpretation is grounded in an already structured world (Kristensson Uggla, 2012). The interpretation starts from 'prejudices', which are part of the 'horizon of understanding', i.e., the interpreter's world-view. The pre-understandings are limited views, clouded or uninformed through assumptions and attitudes that fit into some antecedent structure or established pattern. However, according to Ricoeur (1981) to have knowledge or experience of the world to which the texts relates makes the reader able to understand the meaning of the text (Faroq, 2018).

From the position as a controller in the Swedish export industry during the 1970s and 1980s, the author of this thesis is influenced by the development of the knowledge economy. The strategic focus turned eventually into invisible assets (Itami, 1987), core competences (Prahalad and Hamel, 1990; Barney, 1991), intellectual capital (Brooking, 1997; Edvinsson and Malone, 1997; Stewart, 1997; Bontis, 1999), knowledge management (Hedlund, 1994; Wiig, 1997; Bontis, 1999; Liebowitz and Suen, 2000; Mårtensson, 2000; Johansson *et al.*, 2001), and emphasis on competitive advantages of the resource-based view, customer retention, business process, logistics, and re-engineering (Edvardsson *et al.,* 2000).

As the aspect of control is obvious for a controller, organizational routines are used in management control to select, modify, monitor, and keep knowledge of the organization intact. Even more, those routines carry organizational knowledge and structure the functioning of the organization. Further on, organizational consulting and the university teaching career that added more to the professional experiences led to a valuable reassessment of the theories of management accounting and control during the 1990s (Langfield-Smith, 1990; Simons, 1990; Cooper and Kaplan, 1992; Otley, 1994; Horngren, 1995; Anthony and Govindarajan, 1998; Horngren *et al.*, 1999).

In the end of the 1990s, the social process of organizational learning led the thoughts to knowledge embedded in organizational routines (Argyris, 1977b; Cohen and Bacdayan, 1996; Bontis, 1999). The interest in how organizational routines could be managed became a part of the practical professional understanding of organizational routines that carried aspects of knowledge, executed control, and was the base for learning and change (Nelson and Winter, 1982).

Furthermore, a subject of topical interest for the consulting career was outsourcing. It draws the attention to how producers considered differentials in profitability, how even large and highly mechanized plants kept going largely because of "… an environment upon which it could draw for all sorts of unexpected needs" (Hayek, 1945: 524). Through the subcontracting of routine activities, outsourcing refers to freeing up cash, personnel, time, and facilities for activities, in which a company holds competitive advantage (Bettis *et al.*, 1992; Montgomery, 1994; Lacity and Willcocks, 1995; Kakabadse and Kakabadse, 2000). Outsourcing also refers to gaining benefits and access to world-class capabilities not available internally (Quinn, 1999, 2000).

Finally, outsourcing turned out to be an important subject in the sense that it helped limit the parts of the organizational routines of interest for this research project that begun in 1999. Outsourcing was assumed an important factor that indicates and distinguishes what is outside the organization from what belongs to the organization (Cooper, 1986).

2.3 The Hermeneutical Tradition of Ricoeur

The hermeneutical tradition of Ricoeur (1991) operates from the reader's end of the spectrum. In the reading and re-reading of texts, analytical texts of scientific knowledge that are the results of the development of common-sense knowledge, are considered easier to grasp than questions emerging out of common-sense praxis. The reading of scientific works must be carried out many times in different perspectives to grasp the meanings and organize them with the purpose of interpreting (Kristensson Uggla, 1994).

The locomotor is the alternation between forming hypotheses about meanings and validating those hypotheses through argument. Ricoeur (1991) incorporates Popper's notion of 'falsifiability' (1959/2002), which, in the hermeneutical tradition, means that an interpretation should always be exposed to further merciless interpretations. The hermeneutic interpretation alternates between "… certain aspects, each of which contain types of arguments for or against the interpretation" (Alvesson and Sköldberg, 2000: 60).

A key idea is Ricoeur's high view of the role of the reader. By pushing the author 'out of the way', Ricoeur effectively ensures the reader's world-view and active role in the research setting. It means that "… the interpreter has to distinguish what a

text implies from what it does not imply; he must give the text its full due, but he must also preserve norms and limits" (Hirsch, 1967: 219).

The interpreter asks the question, examines the answer, and again puts the same question to let new levels of knowledge emerge.

> The idea is not to reach any final answer; instead the journey is its own reward. At the end of the voyage, the question itself has been dissolved and a new question has begun to manifest itself, so that the process can start all over again. (Alvesson and Sköldberg, 2000: 86)

When the reader analyzes a text of a certain work, the interpretation may be different from the author's intention. Works belonging to different scientific traditions must be considered a closed totality. By clarifying different theoretical positions, conflicts are uncovered and serve as a starting point for new understanding. In interpreting texts belonging to different traditions certain features on the notion of 'work' have to be considered such as codification, configuration, or individual style (Ricoeur, 1991: 80).

The first interpretation, although adding to the interpreter's understanding, is fairly superficial. However, as the interpreter continues to explore the text, a number of other factors are considered, like knowledge about the author, about the field, and about the revealed context. Each work could further be evaluated as an intersection of texts, where other texts must be read.

Interpretation is the result of the new discourse with the discourse of the text. "Reading is like the execution of a musical score …" (Ricoeur, 1991: 119). Interpretation follows the direction of the message of the text, establishing an intersubjective relation. However, the text is not a relation of speech or dialogue. The interlocutors are not present, nor the atmosphere and the situation around the interlocutors, serving "… to anchor discourse in the circumstantial reality that surrounds the instance of discourse" (Ricoeur, 1991: 108). On the contrary, there is no exchange of questions and answers when reading a text.

The task of reading is to interpret and fulfil the text. Any text is constructed as a mosaic of quotations; any text is the absorption and the transformation of another (Kristeva, 1980). Reading is the setting for the formation based on analogies, metaphors, or hierarchical classificatory procedures (Mallery *et al.*, 1987). The text is left outside and without a world of references; it is "… free to enter into relation with all the other texts that come to take the place of the circumstantial reality referred to by living speech" (Ricoeur, 1991: 109).

The reading may lead into a dilemma of 'self-confirmability' (Hirsch, 1967) when non-validatable hypotheses are proposed. The request of 'rational discourse' and 'critical approach' means that whenever we propose a solution to a problem, it is our duty to try to defeat it intensively instead of defending it. "Those among us who are unwilling to expose their ideas to the hazard of refutation do not take part in the scientific game." (Popper, 1959/2002: 280)

Questions arise out of other arisen questions. Ricoeur's 'hermeneutic arc' (1991: 121) combines two distinct hermeneutics.

The first hermeneutic arc moves from understanding to explanation. Understanding corresponds to a process of hypothesis formation based on analogies, metaphors, or hierarchical classificatory procedures (Mallery *et al.*, 1987). "The choice of research conceptions, questions, and methods is always value laden." (Deetz, 1985: 123)

The second hermeneutic arc moves from explanation to understanding, where a structural analysis is considered a necessary stage "… between a naïve interpretation and a critical interpretation, between a surface interpretation and a depth interpretation" (Ricoeur, 1991: 164). This aims at that all knowledge comes with a point of view and the best the researcher can do is to be critical and reflexive.

The hermeneutic of suspicion makes the hermeneutic arcs narrow down instead of spiraling out of control. However, Robinson (1995: 21) argues that a hermeneutic of suspicion is not enough to prevent from 'inescapable open-endedness'. Consequently, a suspicion of the suspicion is needed to avoid the reader's own distinctive interests, prejudices, and pre-understandings to substitute one invalid understanding of a text with another equally invalid. Together with the 'is like' metaphor-faith, Ricoeur simultaneously seeks to stress the critical 'is not' aspect to render his hermeneutic an open system to avoid a naïve credulity (Robinson, 1995: 13).

To qualify the hermeneutical arc, the examination must refer to a determined time and space and thereby "… provides one anchorage ... for penetrating the hermeneutic circle" (Altheide and Johnson, 1994: 491). The comprehension achieved through structural interpretations also runs the risk of becoming insignificant if not connected to the specific (Ödman, 1994: 52). The interpretation achieved should be able to elucidate present empirical facts or to claim "… its capacity for extension to the sphere of practice" (Ricoeur, 1991: 168).

2.4 The Hermeneutic Arcs applied to the Study

The process of hypothesis formation began against the background of industrial experiences. The SunLibrary story, as initially told, was used in consulting projects that gave rise to different What if?-questions. It continued with reading of the main works on organizational routines by leading authors. This was the setting of the formation based on analogies, metaphors, or hierarchical classificatory procedures (Mallery *et al.*, 1987).

Looking at organizational routine as the foundation of work processes that coordinate and control, leading to regularity, consistency and predictability is the point of departure of Nelson and Winter (1982). The organizational routines are described as repositories of organizational knowledge, seen as embedded and stored in documents or computer files. Other metaphors used to illustrate organizational routines are performance programs, habits or skills of an organization (Cyert and March, 1963; Nelson and Winter, 1982). A metaphor doesn't destroy the complexity but respects interdependence and interaction and reveals a new way of seeing the phenomenon of study and have genuine cognitive import (Ricoeur, 1978; Jahnke, 2012). It shows how knowledge, actors, and objects are perceived. To be able to evaluate plausible conclusion, it is crucial to read leading works from various research traditions and from disparate time-periods because organizational routine theories are developed through many years as will be shown in Chapter 3.

In this study, to elaborate the complexity of the organizational routine, the three aspects of knowledge, control, and learning are chosen. The aspects are understood as three states of ideas that give life to the organizational routine. The examination of the nature of the organizational routine depends on the aspect that is found important. Like most objects and ideas, is can be seen in different ways depending on which aspect you are looking at. The three aspects of knowledge, control, and learning were gradually understood as relevant 'services rendered' by the organizational routines, when using Penrose's (1959/1995) concept 'services that resources render' as distinguished from the resources *per se*.

Organizations are assumed to learn by encoding interferences from history into routines that guide behavior (Levitt and March, 1996). Knowledge is seen as the outcome of learning, where the ability to learn and adapt is critical to the performance. Changes in knowledge embedded in routines indicate that organizational learning occurs. Organizational learning and its sub-processes of creating, retaining, and transferring knowledge are "… a change in the

organization's knowledge that occurs as a function of experience (e.g., Fiol and Lyles, 1985)." (Argote and Miron-Spektor, 2011: 1124) Furthermore, the evolutionary approach considers the firm 'a repository of productive knowledge' that transfers and re-combines organizational knowledge in a dynamic perspective (Nelson and Winter, 1982).

These aspects are to be analyzed in the first hermeneutical arc from three theoretical perspectives of knowledge management, management control, and organizational learning as points of reference looking for how routines behave when they cross the boundary of a business organization due to outsourcing or insourcing. The three chosen perspectives are assumed to alone cope with and cover also other aspects that could have been of relevance like capability, authority, trust, and culture. To organize large quantities of text to fewer perspectives requires an accurate coding process made possible in the theoretical diaries. The interpretation is made possible by an infinite number of readings, carefully documented in the form of a theoretical diary that enables the analysis of different perspectives.[7] This is the reason why the theoretical diaries were important for comparing interpretations.

To be able to communicate the analysis, the processes were documented as carefully as possible (Ödman, 1994: 98) in form of a theoretical diary where the three different perspectives were elaborated and classified in different discourse. The first reading provides only a superficial guess about the meaning, so multiple readings are required to reach a deeper understanding (Farooq, 2018).

According to Ricoeur (1981) this process involves three phases: First pre-configuration, when the reader approaches the text with a set of pre-understandings, then configuration that requires a critical reflexivity from the three theoretical perspectives of knowledge management, management control, and organizational learning, and finally re-configuration that helps the interpreter acquire new horizons of understanding through the three intersections between knowledge, control, and learning.

[7] Documentary codes are derived from three relevant theories of knowledge, control and learning, not especially different from directed content analysis in Hsieh and Shannon (2005).

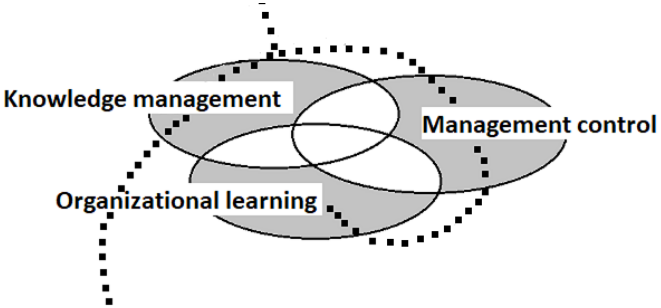

Figure 2.1 The first hermeneutic arc (a part of Figure 1.4 representing the research process)

In Chapter 4, a 'knowledge management' perspective assumes knowledge to be the first aspect to consider as organizational routines are binding knowledge and building organizational capabilities. It is assumed that there exists "… a close connection between the type of knowledge possessed by the personnel of the firm and the services obtainable from its material resources." (Penrose, 1959/1995: 76) These connections could be understood through organizational routines and according to Feldman there is a 'potential for change' to explore (Feldman, 2000: 611).

In Chapter 5 the world-view as a controller is elaborated as a 'management control' perspective enabling simultaneity of action. It is further assumed control and coordination to be the second important aspect of organizational routines. Knowledge and control are assumed to be intertwined and to represent aspects of accountability with separate centers of interest, however, creating a common area of overlap that highlights "… the activities managers can put in motion in the name of knowledge" (Mouritsen *et al.*, 2001: 760). On the other side, control is seen as opposing organizational learning that involves a change but needs control to create predictability.

In Chapter 6, an 'organizational learning' perspective is elaborated. Organizational learning is based on successful performance of the firm in the past and is stored in the organizational routines that constitute the firm's knowledge base, the organizational memory. Organizational routines might change due to new experiences and evaluation of outcomes in terms of targets. Change, here understood as organizational learning, involves both the discarding of obsolete knowledge and the acquiring of new concepts and structures that build the organizational memory. Learning as well as innovation involve not just stability but a change in routines (Nelson and Winter, 1982: 128). However, innovation

identified as 'carrying out of new combinations' (Schumpeter, 1934 in Nelson and Winter, 1982: 130), requires, unlike learning, stability, reliable routines, and at best components, where the "… routinized control system may be deployed so massively" that it will impede change adaptation also when necessary (Nelson and Winter, 1982: 117).

In the second hermeneutic arc, moving from explanation to understanding, the intersections are elaborated to give a necessary abstraction from the world of the texts in referring to a new situation executed by the reader's elaboration (Ricoeur, 1991: 162). The three presumed intersections between the three different aspects of knowledge, control, and learning of the organizational routines are able to be distinguished in the analysis introduced in Chapter 7. Possible interpretations may be reached through many paths. The perspectives are to be understood as a conflict of interpretations, where different perspectives are tested against each other in order to develop a better understanding (Kristensson Uggla, 2012: 59).

Knowledge and control are seen as intertwined along with the suspicion that control could be opposed to learning, because innovation and learning involves a change in routines that the routinized control system impedes (Nelson and Winter, 1982; Cohen and Bacdayan, 1996).

All three aspects of knowledge, control, and learning of the organizational routine have to be elaborated to reach the three presumed intersections of 'organizational memory' of importance for knowledge and learning, 'accountability' covering knowledge and control, and 'predictability' concerning learning and control.

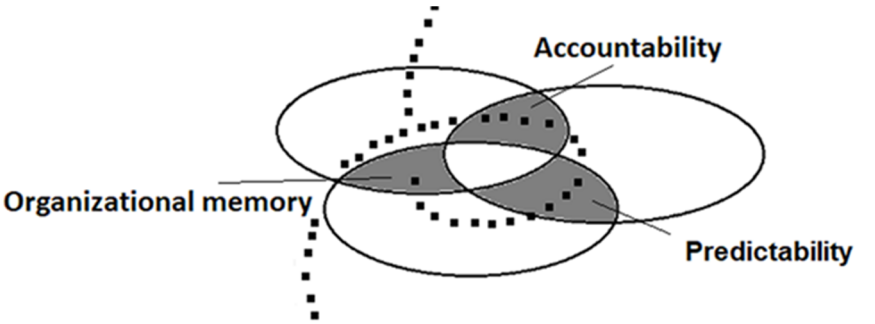

Figure 2.2 The second hermeneutic arc showing the auxiliary intersections (a part of Figure 1.4 representing the research process)

'Organizational memory' is the intersection between knowledge and learning. Organizational memory is seen as important for knowledge and learning and involves both discarding of obsolete knowledge and new knowledge building up organizational memory. Lessons of performance are stored as routines in the organizational memory, which serves as a mechanism of attention able to retrieve knowledge. The organizational memory carries both history and innovative frontiers, indicated by the intersection between knowledge and learning (Nelson and Winter, 1982; Walsh and Ungson, 1991; Stein, 1995). The organizational memory is a store of lessons of performance that carries both history and innovative frontiers, indicated by the intersection between knowledge and learning (Nelson and Winter, 1982; Walsh and Rivera Ungson, 1991; Stein, 1995).

'Accountability' is the intersection that covers knowledge and control. Accountability of knowledge deployment is assumed to motivate performance (Kerr and Slocum, 1981; Roberts and Scapens, 1985; Hoskin, 1996; Lindkvist and Llewellyn, 2003). Learning that indicates the dynamics and the change of organizational routines, is expected to be in opposition to the control aspect that impose the routine's order (Nelson and Winter, 1982).

'Predictability' is the intersection that concerns control and learning. When organizational routines are employed in innovation and change, opposed to routine, the intersection between control and learning gives raise to predictability that also emphasizes development, where "… balancing control and learning is critical to managing the tension between efficiency and innovation" (Simons, 1995: 21).

Finally, through the 'hermeneutics of suspicion' (Ricoeur, 1991), hypothesis about the power of the context, and the impact of the boundaries, introduce the 'phantom limb pain' due to losses in the organization, when organizational routines cross boundaries. 'Phantom limb pain' exposed as a symbol and a primary meaning "… serves as a gateway towards its secondary meaning …" (Itao, 2010: 3) of what happens when organizational routines are cut off and put out of context through outsourcing. Analyzing boundaries is a way to invite other authors to forward revelations and questions for new interpretations (Phillips and Brown, 1993). Loss of organizational memory, loss of accountability, and loss of predictability were elaborated and systematized in a theoretical diary. Then the analysis was developed in Chapter 8 together with the antonym concepts of amnesia, discharge, and unforeseeability that present the interpretation of organizational routines *de facto* absent, e.g. outsourced.

2.5 Qualifying the Hermeneutical Interpretations

Hypothesis about the power of the context and the impact of the boundaries, introduces the 'phantom limb pain' due to losses of organizational memory, of accountability, and of predictability, elaborated with the antonyms of amnesia, discharge, and unforeseeability. The metaphor of the 'phantom limb pain' is exposed as a symbol and a primary meaning of what happens when organizational routines are cut off and put out of context. Outsourcing will push the interpretation of memory, accountability, and predictability into a discourse on the antonyms of 'amnesia', 'discharge', and 'unforeseeability', providing us with a finite loss of knowledge, control, and learning.

The validation procedure in this study involved 'knocking at the door' to these three different research traditions. Validation proceeds through rational argument and debate. The texts appear as a hierarchy of topics open to several readings and constructions. Validation is distinguished from verification, which relies on logical proof. There are no rules for making good guesses, but there are methods on how hermeneutical interpretations are qualified. Validation is closer to the logic of probability than to the logic of empirical verification: "Guess and validation are in a sense circularly related as subjective and objective approaches to the text" (Ricoeur, 1991: 159).

> The logic of validation allows us to move between the two limits of dogmatism and scepticism. It is always possible to argue for or against an interpretation, to confront interpretations, to arbitrate between them, and to seek for an agreement, even if this agreement remains beyond our reach. (Ricoeur, 1991: 160)

This process took place in several theoretical diaries along the line of reading, reflecting, and writing. Following Hirsch (1967: 25) where the "… act of understanding is at first a genial (or a mistaken) guess …" explanation becomes a process of validating informed guesses. The concept of 'guess' is understood as a synonym for *Verstehen* and the concept of validation an equivalent of *Erklären* (Ricoeur, 1991: 161).

The process of guess and validation can result in how things could be understood, but there is no definitive outcome. Framing and reframing are fundamental to help provoke and establish new understandings and meanings (Jahnke, 2012). To emphasize the boundaries of the organization, the understanding gradually changes during the process of interpretation. The discourse is open to new

interpretations. There could be more than one possible interpretation as well as interpretations with little or no likelihood. It is always possible to argue against an interpretation, to confront interpretations, and to arbitrate between them (Ricoeur, 1981).

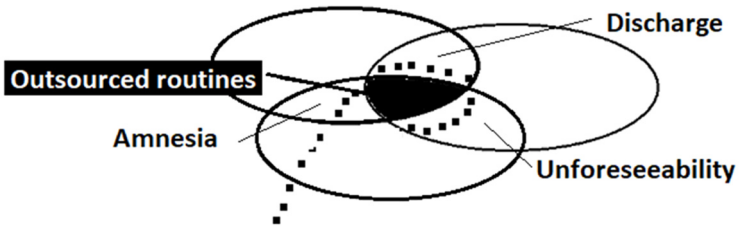

Figure 2.3 The critical 'is-not' examination (a part of Figure 1.4 representing the research process)

The examination of hermeneutic arc refers to a determined time and space and each discourse or action occurs at a particular time and place and thereby "… provides one anchorage ... for penetrating the hermeneutic circle" (Altheide and Johnson, 1994: 491). A validation "… is an argumentative discipline more comparable to the judicial procedures of legal interpretation. It is a logic of uncertainty and qualitative probability." (Ricoeur, 1981: 159; Robinson, 1995)

The 'is-like' metaphors like 'organizational memory', 'accountability', and 'predictability' claim that knowledge production requires communication across the boundaries of existing organizations (Nelson and Winter, 1982; Teece, 1998; Quinn, 1999). The critical 'is-not' metaphors like 'amnesia', 'discharge', and 'unforeseeability' push the interpretation to its limit by rejecting the context of the organization and questioning the organizational structure as limit for the analysis when organizational functions cross the boundary of the organization, as further examined in Chapter 8.

To qualify the interpretations, the specific cases of outsourcing and insourcing are elaborated as validation in Chapters 9 and 10. Outsourcing provides the breakdown of organizational routines, traditionally handled by internal staff and resources, when moved outside the organization (Quinn, 1999). Outsourcing creates enough tension to provide a requested recontextualizing activity.

Outsourcing opens for 'the suspicion of the suspicion' with the antonyms of the intersections as critical 'is-not' metaphors interpreted from interviews with two different companies. Through outsourcing, the conventional boundaries of time and space are challenged and broken down both within and between organizations

(Barthélemy, 2003). Outsourcing requires boundary creation of structures and processes to cope with 'amnesia', 'discharge', and 'unforeseeability', in the interpretations of Chapters 8-10 to be concluded in Chapter 11. It is assumed possible for the hermeneutic arc to narrow down instead of spiraling out of control, if the range of interpretations is by a meaningful action in a new social situation other than the initial one (Ricoeur, 1991: 155). Outsourcing is assumed such an action that provide a qualifying limit, when the interpretation encounters 'the specific' in form of practical outsourcing and insourcing evidences in Section 8.4 about Sun Library, in Section 9.3 about Sandvik Crushing and Screening, and in Section 10.2 about Assemblin.

The interpretation achieved should be able to elucidate different theoretical contributions and extend them to the sphere of practice in the final Chapter 11.

2.6 Interpreting the Sources

All three perspectives of knowledge management, management control, and organizational learning are elaborated in different theoretical diaries. All articles have been registered by date, by author, and by important characteristics of the work. These are possibly marked with a reflection about earlier read text on similar subjects, or with an indication about further texts that have to be discovered within the subject. All readings have been carefully documented, which permitted a movement back and forth in the theoretical diaries "… to the practice – from the text to the act of writing" (Jahnke, 2012: 35). The diaries in word documents made it possible to search for and match different concepts and authors. It was a process over several years; the first registration date being June 8, 2000.

Literature was searched according to the development of the pre-understandings, connected to the development of the theoretical field of control, knowledge, and learning as well as organizational routines, as explained in Section 2.2. Starting from the resource-based theories, the knowledge economy revolved around knowledge and emphasized services rendered by resources and not just resources (Penrose, 1959/1995).

Given the assumption that the control system is an important carrier of knowledge, analysis of routines and knowledge was search for in the management control literature. The critical perspective against traditional financial accounting measurements presented during the 1990s was the base, the manifesto, for

understanding how performance measurement systems and control affect the behaviors of the organization (Eccles, 1991; Kaplan and Norton, 1992; Berry and Otley, 1996; Burns *et al.,* 1999).

The strategic focus turned into the search for knowledge as invisible assets and intellectual capital (Prahalad and Hamel, 1990; Barney, 1991; Edvinsson and Malone, 1997; Brooking, 1997; Bontis, 1999) and from here the development of knowledge management as control of intangibles (Mårtensson, 2000; Johanson *et al.,* 2001). Knowledge management by Nonaka and Takeuchi (1995), tacit knowing by Polanyi (1967), and organizational learning had developed concepts (Argyris, 1977b; March, 1991; Cohen and Sproull, 1996; Huber, 1996) that were relevant to bring together as likely steps of change according to the evolutionary view of Nelson and Winter (1982).

To look at the intersections between knowledge, control, and learning, new theoretical diaries, based on material analyzed in the first diaries, were elaborated before inserting the final text in Chapter 7. Here the theoretical analysis of organizational routine, knowledge, control, and learning resulted in the three intersections of organizational memory, accountability, and predictability.

Outsourcing made it possible to introduce the 'is-not' perspective according to Ricoeur's 'hermeneutics of suspicion'. Resources that cross the boundaries of the organization change the services they yield. This leads to the importance of the concept of boundary and the idea of 'outside boundaries' as fully discussed in Chapter 8. Outside, the antonym of inside, in the second hermeneutical arc developed how the 'out of context' aspect could be referred to as the new concepts of amnesia, i.e., loss of memory, discharge, i.e., loss of accountability, and unforeseeability, i.e., loss of predictability. The interpretation of the SunLibrary, being 'out of context', helped the adequate 'is-not' thinking, as described in Section 2.5 on qualifying the interpretations.

To avoid the interpreter's own distinctive interests, prejudices, and pre-understandings the 'suspicion of the suspicion' is obtained when the interpretation meets empirical facts from interviews in two different companies. The two outsourcing companies Sandvik Crushing and Screening and Assemblin were chosen because they have been involved in outsourcing over long periods of time. They were also quite representative for two industries, where the author's own industrial experiences, described in the pre-understandings, came from.

In the published SunLibrary story (Hill, 1998), the expert voice was the responsible librarian manager, who had reverberations through the different chapters. Also, the interviewees in the other two companies were listened to as

expert voices. The purpose of the qualitative face-to-face open interviews was "… to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomenon …" (Kvale, 1983: 174). The interviewed managers were managers involved in the outsourcing strategies, but also in practical consequences of outsourcing and insourcing. All interviews were made in Swedish and recorded. The literal transcript of each complete recording was sent to the interviewees. The interviewees were later on also given the opportunity to comment on the summaries translated into English, here presented in Section 9.2 and 9.3 for Sandvik Crushing and Screening in Svedala and in 10.2 for Assemblin.

Outsourcing trends and the history discussed by a former CEO in Section 9.2 were already known due to work that the author of this study did in the 1990s with local sub-contractors around Lund, where among other companies also the Svedala plant participated. In Section 9.3 outsourcing as boundary spanning activities and flexibility in the present Sandvik Crushing and Screening is told by the expert voice of the sourcing manager, who was involved in both the strategic discussions and the daily work at the plant in Svedala, where the meeting took place.

The construction corporate group of Assemblin has been involved in a history of complex business process outsourcing (BPO) in time and space as presented in Section 10.2 by the CFO involved in the process of developing and managing the enterprise resource planning (ERP) systems in independent subsidiaries for about 17 years. Thanks to earlier professional experiences and the author's knowledge of controlling in the construction industry, it was possible to listen without interrupting and to understand the story with details about ERP systems. It was important to get a coherent story of the development since the Dutch history of the company had a significant impact on the later expansion.

The interpretations of importance for outsourcing and insourcing are found in connection to each presentation in Sections 9.4 and 9.5 and in Sections 10.3 and 10.4. They have also been verified by each manager before being presented.

The interpretations that emerged during the course of analysis are further elaborated in Chapter 11 in the comparisons of the three cases (Yin, 2009). The three different aspects of 'knowledge', 'control', and 'learning' and the three corresponding intersections of 'organizational memory', 'accountability', and 'predictability', as well as the three corresponding antonyms of 'amnesia', 'discharge', and 'unforeseeability' allowed for a final interpretation.

3 The Organizational Routines

The research problem focuses on organizational routines. The organizational routines are claimed to explain the behavior of the firm and recognized by the three aspects of knowledge, control, and learning. The characteristics of the organizational routines as both stable routines and as a source of change will be explained as well as structure and agency and the origins of organizational routines that demonstrate three 'waves' of routine research. Aspects and perspectives of the organizational routine are summarized in an intermediate conclusion before entering the analysis of each of the three perspectives of knowledge management, management control, and organizational learning

3.1 Characteristics of the Organizational Routine

The hermeneutical interpretation starts from the main works on organizational routines by leading authors because scientific knowledge is assumed easier to grasp than the vast common-sense praxis. The point of departure is the evolutionary view of Nelson and Winter (1982) telling that the concept of routine[8] is used in a highly flexible way, much as a 'program', referring to a repetitive pattern of activity in the entire organization. Routines are defined as regular and predictable patterns, where routines are heritable and selectable by the environment, which is a line of reasoning that presupposes a context.

Three basic characteristics make the understanding of organizational routines quite complicated. Routines are multi-actor phenomena and thus harder to grasp than single-actor phenomena; they may sustain accidents of history that makes

[8] *Routine* the term is used "… to include characteristics of firms that range from well-specified technical routines for producing things, through procedures for hiring and firing, ordering new inventory, or stepping up production of items in high demand, to policies regarding investment, research and development, advertising, business strategy about product diversification and overseas investment. In our evolutionary theory these routines play the role that genes play in biological evolutionary theory." (Nelson and Winter, 1982: 73)

the real function difficult to sort out. The underlying parts of a routine may be tacit and held by an individual actor[9] (Nelson and Winter, 1982; Cohen and Bacdayan, 1996). The concept of routine connotes something impersonal that persists apart from individuals, unlike 'skills' and 'habits' that are limited to the individual level (Nelson and Winter, 1982; Cohen and Bacdayan, 1996).

The importance of routine-based behavior of the organization is one of the pillars of the Carnegie School (Cyert and March, 1963). Nelson and Winter (1982) let the routine be the basic unit of analysis, suggesting that 'organizations remember by doing' and that all forms of external memory, files, computer memory, manuals, and essential coordinating information are stored in the organizational memory of the firm. The organizational memory also embraces the physical state of equipment and the work environment. It means that the 'what', 'how', 'when', and the frequency of performance are held in the organizational memory as well as the reasons behind, and the 'organizational dialect' of the information, both silent and written. Nelson and Winter (1982: 99) propose that "… the routinization of activity constitutes the most important form of storage of the organization's specific operational knowledge".

The routinization of the activity is identified as the *locus* of operational knowledge in the organization. Central to performance and the operational knowledge of the organization is coordination, usually backed up by incentives or sanctions through mechanisms of internal control. Knowledge is connected to the control problem that is related to the organization as an open system. In exchange with the external environment, heterogeneous inputs must be controlled to fit the existing routines and be prevented from unwanted change. New decision rules or new production methods also bring change and innovation into the routines. In large part, innovations consist of new combinations of existing routines that

> … involve nothing more than the establishment of new patterns of information and material flows among existing subroutines. It may involve the replacement of an existing subroutines by new and different … (Nelson and Winter, 1982: 130).

A routine keeps track of the specific routines and of the contextual foundation like 'skills', 'organizations' and 'technology' (Nelson and Winter, 1982). It requires that all organization members[10] continue to know their jobs, i.e.,

[9] *Individual actor* is in the following chapters also called implementer, participant, member, employer.

[10] Concept used "... an organization member is by definition a unit that can accomplish something on its own." (Nelson and Winter, 1982: 98)

receiving and interpreting the messages to perform what is asked for by the routine. Organizational routines are the foundation of work and business processes that coordinate actors and messages. The interaction between the characteristics of the routine and its implementer is thereby of importance because an individual member's information is established through other members' information, received through messages formulated by the routines.

> What is central to a productive organizational performance is coordination, what is central to coordination is that individual members, knowing their jobs, correctly interpret and respond to the messages they receive. (Nelson and Winter, 1982: 104)

The dual view shows routines as both coordinator and memory, underlining sharply that an organization remembers not only 'by doing' but also 'by keeping' to the extent that "… it succeeds in keeping its equipment, structures, and work environment in some degree of order and repairs" (Nelson and Winter, 1982: 105). The usual mechanisms of internal control are operating routinely, and coordination is central. The close connection between the knowledge of the personnel and the material resources is emphasized by Penrose (1959/1995). It means that a portfolio of formal contracts or the market cannot assemble the competence and capabilities of the firm (Zander and Kogut, 1995; Teece *et al.*, 1997). Knowledge is stored in the organizational memory[11] that presupposes the context of an organization because "… routines serve as targets for preservation and replication of an activity within an organization that is using them." (Nelson, 2005: 199)

3.2 The Firm as a Context of Organizational Routines

The evolutionary view of Nelson and Winter (1982) states that the firm functions according to routines and explains the behavior as follows:

[11] "... a plausible answer to the question 'Where does the knowledge reside?' is 'In the organization's memory.' But where and what is the memory of an organization? We propose that the routinization of activity in an organization constitutes the most important form of storage of the organization's specific operational knowledge." (Nelson and Winter, 1982: 99)

> … the heart of our theoretical proposal: the behavior of firms can be explained by the routines that they employ. Knowledge of the routines is the heart of understanding behavior. Modeling the firm means modeling the routines and how they change over time. (Nelson and Winter, 1982: 128)

The position that behavior in an organization is based on routines is consistent with Cyert and March (1963). The firm is here characterized as a hierarchical set of routines, i.e., "… standard ways operating in productive activities as well as in investment and in search behaviour" (Rathe and Witt, 2001: 338). Non-profit organizations or developing or consulting companies are not examined by Nelson and Winter (1982). In their analysis they presuppose large and complex business firms that are concerned with survival and profits and have substantial coordination problems. In such organizations, top management cannot observe and direct all details because of all working interactions by the many organizational members. Here, the concept of organizational member is used not just for individuals but for organizational units that can accomplish tasks with a 'repertoire' of certain skills or routines (Nelson and Winter, 1982: 98). The performance of a routine by one member produces an 'alteration' in the local working environment of another member. The message and the language of performance require interpretations and coordination that are specific for the organization (Nelson and Winter, 1982; Teece *et al.*, 1997: 519).

The evolutionary process treats the firm as a living organism, looking at "… the productive services available to a firm from its resources, particularly the productive services available from management with experience within the firm" (Penrose, 1959/1995: 5). How an industrial firm makes use of and treats productive resources in accordance with plans developed and put into effect within the firm is not contrary to organizational routines, even if routines are not explicitly discussed by Penrose. Penrose insists on the fact that a firm is more than an administrative unit. The firm is a collection of resources that render services. However, the organization is not understood as rational and intelligent that could cope with new challenges and balance between stability and renewal. The organizational knowledge is seen as fragmented, distributed, and embedded in organizational routines. Here a 'whole versus parts' problem arises, i.e., details can be decentralized but a coherent view of the whole is difficult to grasp (Nelson and Winter, 1982: 125). In the basic model of organizational evolution, the organization is driven by relatively stable processes that relate to routines and relate the organization to its environment (Cyert and March, 1963; March, 1981; Nelson and Winter, 1982).

From the evolutionary perspective, routines are said to be important for the reproduction of the firm. History matters. The routines employed by a firm can at any time be regarded as the best the firm 'knows and can do' (Nelson, 2005: 95). The firm is kept on the path of relatively inflexible routines. Given an organization in fully routine operating state, the organizational routines represent the organization's memory of what appeared to have been successful in the past (Cyert and March, 1963; Nelson and Winter, 1982). The firm's 'repertoire of actions' is seen as quite limited, given that routines encode and perpetuate what has been learned. "Firms are expected to behave in the future according to the routine they have employed in the past." (Nelson and Winter, 1982: 134) However, to be able to uphold this idea about path-dependent development, Nelson and Winter clearly state that their analysis does not include consulting and developing business, they only analyze "… organizations that are involved in the production or management of economic change as their principal function" (Nelson and Winter 1982: 97).

Organizational routines reflect a truce, developed on stability of behavior and expectations that enables their functioning. Different kinds of firm routines are emphasized in the evolutionary view like routines that bind knowledge and like routines that coordinate and are directed to organizational control (Nelson, 2005: 95). Routines enable the performance to result in a predictable and specifiable outcome. Routines are directed "… to replication of existing routines and to imitation of routines employed by other organizations" (Nelson and Winter, 1982: 99). Routines are developed to save time and attention during decision-making and to economize with limited cognitive resources. Sacrificed flexibility is the price to pay for efficient routines. A routine, as 'a way of doing', covers both the physical technologies involved in the operations and the socially organized work that build organizational capabilities (Becker, 2004).

Persistent and stable routines have also been related to the dynamics of how routines arise, stabilize, and change (Pentland and Rueter, 1994; Feldman and Pentland, 2003; Feldman, 2004; Becker, 2005; Pentland and Feldman, 2008). These phenomena require explicit consideration and are explained through unpacking the complex internal structure of the routine that emphasizes the routine as a source of change.

3.3 Organizational Routines as a Source of Change

Routines build up the organization's relatively constant response systems (Levitt and March, 1988; Weick, 1991). Stability is seen as the starting point for defining the characteristics of routines as repeated patterns of behavior, bound by rules and customs, assuming that

> … most change in organizations results neither from extraordinary organizational processes nor forces, nor from uncommon imagination, persistence of skill, but from relatively stable routine processes that relate organizations to their environment. (March, 1981: 564)

Nelson and Winter (1982) anticipated the recent focus on endogenous change[12] in routines, because they already argued that routine operation is aligned with routinely arising laxity, slippage, rule-breaking, defiance, and sabotage. The mindless conduct of the routine was brought forward "… since whatever changes take place may be expected to follow the path of least resistance" (Nelson and Winter, 1982: 135; Feldman and Pentland, 2003). It means that stability occurs because organizations are known for the sameness of responses, and for the repeated performance, also known as path-dependency (Stinchcombe, 1990; Cohen and Bacdayan, 1996).

However, ambiguities still arise concerning the intentionality of routines and the level of change versus stability. The behavioral regularities of routines address habits that are automatic until disturbed by an external change. According to Feldman (2000: 612) Nelson and Winter (1982) acknowledge the possibility of change, which they refer to as mutation, but their definition of routine focuses on the lack of change stating that all regular and predictable behavioral patterns of firms is 'routine'.

Organizational routines are seen as stable, as long as participants are considered to repeat actions done in the past without thinking about what they are doing (Feldman, 2000). This is aligned with the notion of routines as heuristics, or simple rule of thumb. Organizational routines are stable, described as computer programs and genes. On the other hand, the grammar metaphor introduced by

[12] However, at a lecture given by Professor Sidney G. Winter, May 18, 2015 at CIRCLE, Lund University, he emphasized that already in Chapter 5 of the book (Nelson and Winter, 1982) the organizational routine was seen as a source of endogenous change, earlier than the first studies of change by Feldman (2000).

Pentland and Rueter (1994) provides arguments for change in the sense of possibilities to recombine. Changes have earlier been referred to as adaptation (Cyert and March, 1963) or mutation (Nelson and Winter, 1982) and explained by a crisis or an external shock (Gersick and Hackman, 1990), or by ambiguity (Miner *et al.*, 1990).

Feldman (2000: 611) uses the definition that organizational routines are "… repeated patterns of behaviour that are bound by rules and customs and that do not change very much from one iteration to another …" This way of looking at change severely limits the role of human agency. However, later the definition is expressed as "… repetitive, recognizable patterns of interdependent actions, carried out by multiple actors" involving more than one person in more than one interaction (Feldman and Rafaeli, 2002: 311; Feldman and Pentland, 2003: 95). Participants could perform in new ways and, due to how they act and innovate, and could generate a stream of variations and exceptions of the routine. When intended outcomes are not reached, participants respond by repairing, expanding, or striving, which might change the routine and create new practices.

Routines are hereby understood as flows of connected ideas, actions, and outcomes, where the dynamics of a routine involve the participants' reactions to outcome of previous iteration of the routine. The inherent capability of every organizational routine generates change. If the elements of a routine may change when carried out, it will have consequences for which elements to include in the routine and thus for the outcome that will change (Feldman, 2000).

To further explain how routines can be a source of change and stability, the distinction between 'ostensive' and 'performative' aspects and 'artifacts' are elaborated on the idea that routines, like other social phenomena, embody both structure and agency (Giddens 1984 in Feldman and Pentland 2003).

The 'ostensive' aspect of a routine indicates that the perception of what the routine is sets the pattern, and enables participants to account for, to refer to, and in a cognitive way understand the general and abstract patterns of the routine. The ostensive aspect of the routine is seen as a role model, a script used to guide the action of the participant (Feldman and Pentland, 2003; Pentland and Feldman, 2005; Turner and Rindova, 2012). It also embodies what is typically thought of as the structure of the routine. Feldman and Pentland (2003) argue that there are multiple ostensive patterns of any organizational routine, and that they are created and recreated through practice, i.e., performance can vary widely among participants.

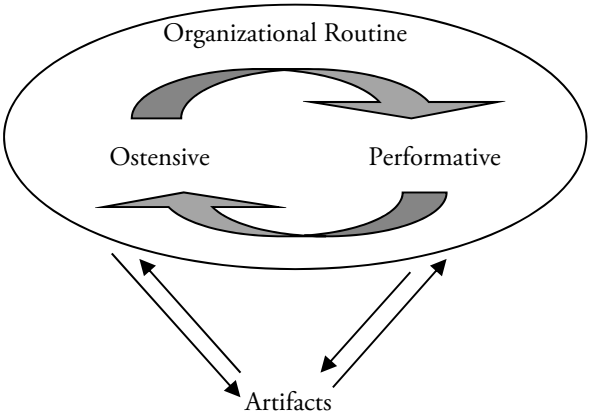

Figure 3.1 The generative system the organizational routine presented according to Pentland and Feldman (2005: 795, figure 1).

In the SunLibrary case in Section 1.1, ostensive aspects could be recognized as the core collection of basic references and the online catalogue (Hill, 1998: 46) forming the service routines of the library. To comply with state and federal regulations for contract staff, Sun had established procedures that defined and limited the scope of interaction between regular Sun staff and contract staff. Sun's management found that the status of the staff as contractors prevented SunLibrary from adding full value. The barriers within Sun were said to hinder the capacity of the staff to provide the right services. The strong symbolic dimension of 'the glass wall' influences action to the extent that it must be considered an ostensive aspect of the routine.

The 'performative' aspect embodies agency and refers to "… the specific actions taken by specific people at specific times when they are engaged in an organizational routine." (Feldman and Pentland, 2003: 102). It is further "… characterized as actual performances by specific people, at specific times, in specific places" (Pentland and Feldman, 2005: 795). A performative definition is one that is created through practice in the organizational context. The performative aspect brings the routine to life. It creates, maintains, and modifies the ostensive aspects of the routine, and allows members to choose a course of action (Pentland and Rueter, 1994; Feldman, 2000; Feldman and Pentland, 2003; Pentland and Feldman, 2005).

In the SunLibrary case in Chapter 1, the performative aspects are the librarian activities consisting of management and the daily activities of SunLibrary. The performative aspects also embody agency in form of the manager Cynthia Hill. As Adecco had no experience in operating or managing libraries, Cynthia Hill was hired by Adecco to compensate for the lack of performative aspects of the routines. The performative aspects embody the involvement of SunLibrary staff in key project, providing information and knowledge management to Sun employees based on timely response to technical and complex inquiries.

According to Feldman and Pentland (2003: 102) "… the ostensive aspect of the routine is the idea; the performative aspect, the enactment", which means that the ostensive part, the 'know that' aspect, can be illustrated by a musical score and the performative part, the 'know how' aspect, by the actual performance of the music. In much the same way as 'speaking' relates to 'language', the performative aspects are vital for the ostensive aspects. The ostensive and performative aspects of organizational routines relate to each other like "… the performances creating and recreating the ostensive aspect and the ostensive aspect constraining and enabling the performances" (Feldman and Pentland, 2003: 105). By further studying how the ostensive and performative aspects of a routine interact, it is possible to reach a deeper understanding of how the routines shape higher-level organizational entities (Salvato and Rerup, 2011: 485).

Interaction between the ostensive and the performative aspects could clarify how new searching routines were developed in the case of SunLibrary described in Chapter 1. The new searching routines of SunLibrary managed to improve the Sun's intranet.

'Artifacts'[13] reflect the ostensive and the performative aspects of a routine but are different from both the ostensive and the performative aspects of a routine. Artifacts manifest themselves in written rules or in general physical settings, like a factory or an office. Artifacts may shape the ostensive aspect of a routine but also constrain performance, which is important because the routine does not develop until performance is executed (Pentland and Feldman, 2008). How various artifacts may codify, prescribe, enable or constrain an organizational routine may be illustrated by SunLibrary, where descriptions of the glass wall as 'precluding top-notch service' could reflect the performative aspects of the organizational routines. Perceived glass walls also allude to barriers, i.e., *de facto* glass walls, and

[13] *Artifacts* from Latin *arte* (*art, ars*) by skill + *factum*, (*facere*) to do. Something characteristic of or resulting from a particular human institution, period, trend, or individual (Merriam-Webster online Dictionary).

may as such be interpreted in contractual and legal sense as artifacts. Artifacts such as rules and written procedures, the contract *per se*, can serve as a proxy for the ostensive aspect of a routine. The status as contract employees also belongs to artifacts that guide action. When designing artifacts, managers hope for patterns of actions, but it is not enough to design a certain procedure to achieve a certain performance (Pentland and Feldman, 2008). In the case of SunLibrary there were, for example, both a vision and a management plan elaborated according to the contract, but it did not help SunLibrary to provide right services and full value-added.

A novel and more dynamic characterization of artifacts shows how artifacts and their properties can be understood as both social context and technologies that support change (D'Adderio, 2008; Pentland and Feldman, 2008). Recent studies (Turner and Rindova, 2012) give a deeper understanding of the nature and role of artifacts when designing organizational routines.

Changes in routines could initiate innovations; innovations here identified as 'carrying out of new combinations' (Schumpeter, 1934 in Nelson and Winter, 1982: 130). Context itself may change as artifacts are transformed during routinized performances. However, without stability of operating conditions changing environmental conditions are associated with routine disruption (Baum and Shipilov, 2006 in Turner and Rindova, 2012: 24). The dilemma between copy exactly (replicate) and change (innovate) is solved by maintaining two sets of ostensive and performative aspects; one that supports alignment (replication) and the other that supports improvement (innovation) (D'Adderio, 2014). To incorporate a new sub-routine in an existing routine, two conditions must be upheld: Firstly, the existing routine must be reliable so that the incorporation of the sub-routine does not create problems, and secondly, the existing routine must be free from ambiguities of scope, so that it could involve the new sub-routine in the use. The consequences of change, however, are not predictable until a reasonable amount of actual operating experience have been accumulated. The experiences of how valuable routines are retained, and less valuable routines expire will be further interpreted in Section 3.7 that discusses organizational routines crossing the boundaries of the organization.

The traditional understanding of organizational routines to explain the inertial quality of organizational structure in the evolutionary theories (Nelson and Winter, 1982) has long been challenged. Interactions between the ostensive and the performative aspect create changes, where organizational learning could be the outcome. Relationship between artifacts and performance is about control of behavior while divergence between artifacts and the ostensive aspects may indicate

disagreement between management rules and working routine patterns, and divergence between the ostensive and the performative may create possibility to reflect and alter the future iteration of the routine (Pentland and Feldman, 2005: 810).

3.4 Routines as Structure and Agency

Two different aspects of the organizational routine are discussed. The ostensive aspect is the abstract idea that represent structure, and the performative aspect represents agency that indicates the actual performance, specified in time and place.

> A critical part of this conception of routines lies in the relationship between structure and agency. As Giddens (1984) and others have argued, rules, norms, schema, scripts, and other cognitive artifacts are 'resources' for action, but they cannot be understood as determining action. (Pentland and Rueter, 1994: 491)

The actual performance of a routine can create opportunity for variation, selection, and retention of new practices and patterns of action as members tend to reinforce and reproduce the underlying structures. The relation between the performative and the ostensive aspects is equivalent to Giddens described as an agent's common interaction with structure, where the agent's actions are constrained and enabled by structure (Feldman and Pentland, 2003: 102-103).

Routines can be described as ordered sets of actions. By using the metaphor of a grammar, the sequential structure and pattern of a grammar can be applied to any ordered sequence of elements like a routine that acknowledges both structure and agency (Pentland and Rueter, 1994; Pentland, 1995; Feldman and Pentland, 2003). The syntax of the grammar represents dependencies between events in a sequence even if they are separated by agency. The sub-routines of a routine are captured and combined to form new routines. The grammatical model of organizational processes is proposed to understand "… the relationship between institutional, technological, coordination, and cultural structures and the details of organizational actions, routines, and processes." (Pentland, 1995: 554)

> An organizational routine is not a single pattern but, rather, a set of possible patterns – enabled and constrained by a variety of organizational, social, physical, and cognitive structures – from which organizational members enact particular performances. (Pentland and Rueter, 1994: 491)

It is the routines that make organizations efficient structures for collective action (March and Simon, 1958; Cyert and March, 1963; Nelson and Winter, 1982; Levitt and March, 1988). Routines exist within a multiplicity of structures that influence the patterns of action. Complex routines of coordination offer mechanisms for control, dependent on structures that are established by past experiences (Nelson and Winter, 1982: 112). Having such structural considerations in mind, it is not difficult to imagine that major reorganizations and technical investment can dramatically fail if founded on misunderstandings of the underlying system of routines (Cohen and Bacdayan, 1996). The strong agency concentration on a human actor that carries out the routine performance indicates the importance of structure because "… every organizational practice is always bound with materiality. Materiality is not an incidental or intermittent aspect of organizational life; it is integral to it." (Orlikowski, 2007 in Pentland *et al.*, 2012: 1486) Even if technology embodies structures that enable and constrain behavior, technology is to understand as artifact (Orlikowski, 2000; Feldman, 2004).

In the definition of organizational routines as "… repetitive, recognizable patterns of interdependent actions, carried out by multiple actors" there is a focus on action and actors to explain the dynamics of organizational routines (Feldman and Pentland, 2003: 93). The interaction between a routine's implementer and the routine itself is important according to Feldman (2000), who studied change of routines and the implementer's reactions to the intended outcome. She concludes that the interplay between variability and stability of the routine becomes understandable because agency transforms and modifies structure through the business and work processes of everyday organizational life. The performance of the routine, created and recreated by different actors, creates variety (Pentland, 1995; Feldman and Pentland 2003; Pentland and Feldman, 2008). The involvement of multiple organizational members introduces diversity. The individual members that perform the routine have different information and different ways of interpreting it. They look for different results and act as agents in a context created by the actions of other members. It is held for granted that key information required for the improvement of a routine can only be obtained with the active cooperation of those involved in its performance, even when a repetitive sequence of actions is carried out by continuously changing actors

(Winter, 1996). Variations in the efficiency of routines can be explained by "actor sequences" (Miller *et al.,* 2014: 129). A broad variety of actions is relevant for the participants of the routines, referred to as the "… patterned sequences of learned behaviour involving multiple actors who are linked by relation of communication and/or authority" (Cohen and Bacdayan, 1996: 406).

The framework of Feldman and Pentland (2003) abandons the routine as an abstract principle and something impersonal. The emphasis on agency leads to the opinion that "… there is no single, objective routine, but a variety of different perspectives" (Feldman and Pentland, 2003: 104). Several studies thereafter emphasize the importance of studying agency to understand the creation and reproduction of practices (Labatut *et al.,* 2012) and focus on the performative aspects of organizational routines (Feldman, 2003; Pentland and Feldman, 2005, 2007, 2008; D'Adderio, 2008). Attention is paid to the individual actors, who perform in organizations (Feldman and Rafaeli, 2002; Felin and Foss, 2004).

Studies on the dynamics of routine transfer, from one setting to another, show how individual members can influence the effectiveness of the organizational routines (D'Adderio, 2014). The firm's structure creates and maintains routines. The main opponents of how routines work within firms argue that it is difficult to establish linkages between individual action and organizational outcome at the organizational level (Felin and Foss, 2004). The routine as a unit of analysis could be seen from two different standpoints, from the firm perspective connected to the internal resources of the firm or to variation seen from the individual actor perspective. Contrasting the outcome of the firm with individual performance stems from the following two different views the 'capabilities viewpoint' and the 'practice viewpoint'.

3.5 Two Different Viewpoints and Origins to Routines

There are two viewpoints with different origins, labelled 'capabilities' and 'practice' (Parmigiani and Howard-Grenville, 2011: 414); also known as 'dynamic capabilities' and 'routine dynamics' (Feldman and Pentland, 2008).

The first viewpoint 'capabilities' or 'dynamic capabilities' is path-dependent; more homogeneous, and substitutable than is usually assumed. It originates from the resource-based view, which considers strategic capabilities as a pool of internal

resources (Penrose, 1959/1995; Rumelt, 1974; Wernerfelt, 1984; Barney, 1991; Zollo and Winter, 2002). "In moderately dynamic markets, dynamic capabilities resemble the traditional conception of routines." (Eisenhardt and Martin, 2000: 1105) This viewpoint considers the organizational routine as an entity, as a 'black box', which has been criticized, because collective outcomes of an action need to be addressed rather than being 'black-boxed' (Felin and Foss, 2009: 165).

The 'capabilities' viewpoint is connected to the firm's process of exploiting and creating knowledge (Nonaka *et al.,* 2000). However, the exploiting of external resources and the ability to integrate efforts of different actors remain fairly unarticulated (Grant, 1996; Teece *et al.,* 1997). This capabilities viewpoint concentrates on how the firm integrate, reconfigure, renew, and transfer its resources. The firm's capabilities need to be understood in terms of organizational structures and managerial processes, which support productive activity. The term 'capabilities' emphasizes how strategic management adapts, integrates, and reconfigures internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment (Teece *et al.,* 1997: 515). The capabilities of a specific firm are associated with a specific plant and equipment of that type of firm. Capabilities are a list of ingredients, consisting of productive, firm-specific assets, and of individuals and groups that enable distinctive activities to be performed. Capabilities, thereby, involve both organizational structure and managerial processes, and would refer to Penrose's notion on the important interaction between material and human resources.

Capabilities have routines as fundamental building blocks (Cyert and March, 1963; Dosi *et al.,* 2003) and are higher level, or second-order, routines (Winter, 2003). Capabilities indicate the firm's quality of being capable and 'routine' is used "... for repeated performance in some *context* that has been *learned* by an organization in response to *selective pressures*" (Cohen and Bacdayan, 1996: 683). It has been discussed whether the concept of routine fully captures the processes and incentives, essential to understanding organizational capabilities to which the routines contribute (Teece *et al.*, 1997). A distinction is made between capabilities and competencies: individuals have competencies, while organizations have capabilities. Organizational capabilities require the exercise of individual skills that even involve a large component of tacit knowledge (Nelson and Winter, 1982). It will be discussed as a coordinated response in the next Chapter 4.

This viewpoint of 'dynamic capabilities' refers to existing internal and external firm specific competences; the term 'dynamic' to the capacity to renew competences (Teece *et al.*, 1997; Teece, 2012). Capabilities and competence cannot be assembled through a portfolio of formal contracts or through the

market (Zander and Kogut, 1995; Teece *et al.*, 1997). Dynamic capabilities are the firm's ability to integrate, build, and reconfigure internal and external competences (Leonard-Barton, 1992).

The second viewpoint 'practice' or 'routine dynamics' is based on organizational theory, and focuses on the processes in the black box, emphasizing precisely the internal dynamics of the routine (Feldman *et al.*, 2016). There are clear parallels to be drawn with 'dynamic capabilities' defined as "… the capacity of an organization to purposefully create, extend, or modify its resource base" (Helfat *et al.*, 2006: 4). Even if there are actors involved in complex routines, 'capabilities' unlike 'practice' do not look into the internals of the routines. The viewpoint 'practice' focuses on how people act and the relations between actions and the structure of organizational routines. It pays attention to motivation and incentives of the individual human actor and to the operation of everyday activities within different contexts and time and requires "… researchers to engage in the core logic of how practices are produced, reinforced, and changed" (Feldman and Orlikowski, 2011: 1241; Pentland *et al.,* 2012: 1484). Also, work environment and equipment are included in the firm's patterns of current practice and learning (Teece *et al.*, 1997). 'Practice' has its focus on the influence of actors, holding the inner parts of the routine as the unit of analysis. Actors are therefore impossible or difficult to replace because all have different intentions and understandings. Earlier work on organizational routines did stress the collective, tacit, non-observable aspects of routines, and neglected to build routines on an individual foundation (March and Simon; 1958; Cyert and March, 1963). A problem with the practice-based studies is that they presume individuals in isolation, not embedded in a social context.

Both viewpoints 'capabilities' and 'practice' have different strengths and different focus of analysis. Looking at 'capabilities', the principles of coordination of individuals and functional competence are not possible to understand from the individual standpoint (Zander and Kogut, 1995). The 'capabilities' viewpoint focuses on the firm structure, which creates and maintains routines, not on the routine itself. It answers question like 'what?' and 'why?' while the 'practice' viewpoint answers 'how?' (Parmigiani and Howard-Grenville, 2011). Turning to the metaphors discussed in Section 3.3 above, routines are considered genes or building blocks of 'capabilities', while routines from the 'practice' viewpoint are understood as grammar and repertoire of memories.

Changes are also difficult to study from a 'practice' viewpoint because they do not account for the difference between more radical, frame-breaking changes and emergent micro-changes that result from small variations of performance.

However, small changes are not to be ignored, because routines are created through action and do not exist without action (Feldman and Orlikowski, 2011). This is based on how the 'ostensive' and the 'performative' aspects capture the internal dynamics of the routine that result from the actions taken (Feldman, 2000). The practice-based concept of organizational routines is claimed to have difficulties to explain organizational stability when there are variations in individual performance. A concept like path-dependence is chosen to show that organizational structures and rules are persistent and not easily changed by individuals. Viewpoints that emanate from the individual actor as the source of change or stability do not integrate organizational factors. A theory of routine change must be able to explain both individual and organizational motivations for renewal and resistance.

> If we look closely enough at the details, we are almost certain to observe small changes everywhere. But these changes might not be significant in the overall functioning of the routine, and the underlying patterns and structures may remain stable despite variations between performances. (Geiger and Schröder, 2014: 177)

The 'practice' viewpoint underestimates the influence of rules and structure, even though routines usually have their origins in rules and structure. A deviation in performance does not result in a changed routine, if the underlying rule remains unchanged. However, small or slow rule-breaking shifts in the rule could result in changes in the path-dependent pattern that are detected too late to be able to reverse as they appear gradually and unnoticed (Geiger and Schröder, 2014).

Both viewpoints 'capabilities' and 'practice' must be examined because the underlying assumptions and the level of analysis differ, even if they connect and have several similarities. Here new patterns of action are created while the effect of technology puts artifacts at the center of the routine. Artifacts interplay with and change both the ostensive aspects of the routines and actors' performative capacities (Labatut *et al.*, 2012). There is an ongoing approach between the two viewpoints; 'practice' has begun to recognize the importance of the organizational context and 'capabilities' to elaborate socio-material and technological artifacts (Parmigiani and Howard-Grenville, 2011). How the interaction between technology and organizational routines affects the emergence of new 'practice' was already shown in the SunLibrary case, where web-based technology made a worldwide delivery possible and increased the participation of the SunLibrary in the development of Sun's intranet. "The construction of synergetic ostensive patterns allowing for participants 'coordination' showed how different routines

were interconnected and connected with the local institutions." (Labatut *et al.*, 2012: 64)

A novel and more dynamic characterization of artifacts, understood both as social context and technologies, shows how artifacts can be designed and redesigned to support change (D'Adderio, 2008; Pentland and Feldman, 2008). It opens for a new wave of analyzing routines. The focus is on the role of materiality and technology to understand how artifacts influence routinized performances (D'Adderio, 2011).

3.6 Three Waves of Routine Studies

The development of routine research could be explained in three "waves"[14] of approach. The unit of analysis differs because of different focus and characteristics, which gives different insights into the organizational routines capacities to explain organizational action.

The "first wave" of routine studies and its characteristics and contributors focuses on organizational routines as something impersonal and lifeless that persists apart from individuals. It gives insight into the formal part, showing how jobs are defined by the routines, how organizational members do their jobs, and how they are expected to continue to behave in the future like in the past. The action is deterministic. It is the collection of the individual member's performances that constitute the productive performance, where "… skills, organization, and 'technology' are intimately intertwined in the functioning routines, and it is difficult so say exactly where one aspect ends and another begins." (Nelson and Winter, 1982: 104)

The "second wave" of routine studies focuses on the internal dynamics of the organizational routine, starting from the core definition of a routine as "… a repetitive, recognizable pattern of interdependent actions, involving multiple actors" (Feldman and Pentland 2003: 96). The characteristics of the different waves shows a radical shift from thinking about the routine as a rigid, lifeless entity to the routine as a generative dynamic system consisting of performative aspects, ostensive aspects, and artifacts in interplay. These investigations of the internal dynamics of the routine give insights into the routine's capacity to evolve and change and bring the agency into the analysis of the action. However, such

[14] D'Adderio (2011) uses two 'waves' and an 'artifactual turn' in four steps shown in Figure 3.3

analysis tends to make organizational structure and context less important and overshadow artifacts as already shown in the above sections.

Development	*Unit of analysis*	*Focus*	*Characteristics*	*Insights*	*Action*	*References*
"First wave"	Routine	External object	Lifeless, rigid	Formal rules	Deterministic	Nelson & Winter 1982 Cohen et al. 1996
"Second wave"	Agency	Internal dynamics	Generative system	Capacity to change	Part of agents' performance	Pentland & Reuter 1994 Feldman 2000 Feldman & Pentland 2003 Feldman & Rafaeli 2003 Pentland & Feldman 2005, 2008 Turner & Rindova 2012
"Third wave"	Artifacts	Technologies and materiality	Complex influence	Interaction human and non-human	Shape practice	D'Adderio 2011 Feldman & Orlikowski 2011 Salvato & Rerup 2011 Oliveira & Quinn 2015

Figure 3.2 Three waves: An overview of the organizational routine research

The present "third wave" (D'Adderio, 2011) use artifacts as the unit of analysis. The focus is at the very center of the routines theory and gives a deeper and more nuanced characterization of the role of materiality and technology to help understand the complex ways in which artifacts influence routinized performances. Classifications and rationales embedded in operating procedures are also influenced by the context, where the procedures are adopted. Artifacts construct information and classify it according to specific worldviews. The third wave shapes practice as action. Thus, artifacts play a fundamental role in the production and reproduction of routines, considering "…the fact that a routine does not reside in any one place, and certainly not solely in the human mind, but is instead distributed *across* people and artifacts, including rules and technologies." (D'Adderio, 2011: 202)

The role of non-human actors has become an explicit topic in recent research on organizational routines. The term actor does not necessarily refer to human actors but to artifacts in different technological arrangements (Pentland and Feldman, 2008; D'Adderio, 2011; Feldman and Orlikowski, 2011; Robey *et al.,* 2012; Pentland and Hærem, 2015). In a study of invoice processing routines, Pentland and his colleagues (2012) observed that as much as 35 % were carried out by the computerized workflow system. Artifacts have both social and material roles that serve as possibilities or constraints and encode both the intentions of managers and the formal controls. Artifacts are created and evolve when organizational members engage in the performance.

Artifacts as technologies reflect higher-levels of institutional processes. It is assumed that technologies have disciplinary effects on practice by means of routines. Technologies are understood as managerial, political, or technical and in a broader meaning as codified bodies of knowledge, ideological structures, and new forms of actor hood, embedded in settings that shape practice. The specific roles of technologies have been especially addressed in studies of organizational routines to stress how artifacts are used to provide a better understanding of organizational change (Hopwood and Miller, 1994 in Labatut *et al.*, 2012).

Turning to the SunLibrary story in Chapter 1, new electronically delivered services were identified and licensed, i.e., artifacts as library technology development, equally important for the development of the library as the structure, as Adecco context, or the human agent, the library manager Cynthia Hill. However, artifacts are best understood as embedded in the organizational context. The importance of firm specific routines has already been mentioned in Section 3.2, where routines are expressed as 'difficult-to-imitate combinations' of organizational, functional, and technological skills and knowledge (Penrose, 1959/1995; Nelson and Winter, 1982; Prahalad and Hamel, 1990; Teece *et al.*, 1997). Routines are related to the social and artifactual context, but the context itself is not a fixed background and may change as artifacts are transformed. Such a crucial notion was also recognized in the initial SunLibrary story, where the organizational context defined and limited the scope of interaction between the regular Sun staff and the contracted staff. The context constitutes and reconstitutes routines, which was shown by SunLibrary's connection to Adecco as a contributing hospice organization.

In line with the 'third wave' of organizational routines studies, the framework of Oliveira and Quinn (2015: 516) shows how management control practice is repeatedly performed and supported by technologically embedded rules that eventually gain a routinized nature. Rules are found embedded within the technological artifacts (the material realm), which account for the pervading influence of technology on the practices of contemporary organizations. The actual performance encompasses the performative dimensions of the routine (the action realm). The ostensive aspect of the routine is a rule that provides guidance for action. Rules are understood as tacit, cognitive structures of the ostensive aspect of the routine accepted by the organizational members (the psychological realm). Essential for the ostensive aspect is that it emerges and is sustained in the acting out of the routine. Without action routines may become meaningless, diminish and even dissipate (Oliveira and Quinn, 2015: 517). As already discussed by Nelson and Winter (1982: 99) "… the routinization of activity

constitutes the most important form of storage of the organization's specific operational knowledge". The routine keeps track of the contextual foundation like 'skills', 'organizations' and 'technology'.

Furthermore, the contextual foundation could be understood as levels of the organizational hierarchy that reveals different dimensions of the same organizational routine to managers and employees at different firm-levels (Salvato and Rerup, 2011). Such discussions may have consequences for how different activities on different firm-levels get outsourced and show how to understand the concept of 'replication'. As stated by Nelsons and Winter (1982: 118) "… we think of replication as being a costly, time-consuming process of copying an *existing* pattern of productive activity." Replication is about recreation of a routine in and through a different context. It means that the 'same routine' is placed in a parallel operation at a different site with similar but new resources coordinated in a similar way (Winter, 1996). This building and transferring of routines involve organizational learning and transmission of knowledge across levels of the organization or across boundaries. As already discussed in Section 3.3, artifacts manifest themselves in written rules or in general physical settings, like production line, a factory or an office system (Pentland and Feldman, 2008). The rules define and create the characteristics of the organization and maintain its boundaries, transforming the complexity of the outside into meaningful patterns of the inside.

A novel, dynamic characterization of artifacts is that artifacts are understood as both the social context and the technologies that support change (D'Adderio, 2008, 2011; Pentland and Feldman, 2008; Turner and Rindova, 2012).

Four steps are elaborated to conclude on the present 'third wave':

Shifts	*Key role*	*Impact*
step 1	distributed agency	combined influence of human and non-humans
step 2	aw ay from agency	actors intentions embedded in artifacts
step 3	active artifacts	shape the course of the routine
step 4	performative struggle	competing organizational agencies

Figure 3.3 The artifactual turn in four steps according to D'Adderio (2011: 222)

Changes that affect organizational routines are not just a trial-and-error learning, but a result of the revision of the underlying rules and a renewal and questioning of the existing structure that come close to 'double-loop learning' of Argyris (1977a), meaning that context changes when artifacts transform. It is important to note that actors' knowledge, skills, and competences depend on the involved

artifacts, i.e., artifacts participate in the creation of knowledge, transformed by the tools that are used. Routines are not neutral. They reflect and select knowledge according to the rationales of the agencies, like an ERP[15] systems that:

> … create a common platform for the accumulation of common knowledge, constrain the ability of practitioners to alter the results of another, regulate who has access to making changes, track the progress of changes, link multiple sites in different time/geographical locations, facilitate data sharing … (D'Adderio, 2011: 215).

Development	*Unit of analysis*	*Focus*	*Characteristics*	*Insights*	*Action*	*References*
"Third wave"	Artifacts	Technologies and materiality	Complex influence	Interaction human and non-human	Shape practice	D'Adderio 2011 Feldman & Orlikowski 2011 Salvato & Rerup 2011 Oliveira & Quinn 2015
"Extended third wave"	Communities of practice	Actual work practice	Competing organizational agencies	Performative struggle	Change standard operation routines	Lave & Wenger 1991 Brown & Duguid 1991 D'Adderio 2011 Pandey & Dutta 2013 Philipson & Kjellström 2019 (forthcoming)

Figure 3.4 The extended third wave adding communities of practice to show actual work practice

From the "third wave" of routines theory it is possible to understand how changes in organizational structure, technology and context affect the survival and the reproduction of the organizational routine (D'Adderio, 2008, 2011), when a variety of configurations of artifacts leads to different outcomes that will affect the routines crossing boundaries, due to outsourcing decisions.

However, it should be possible to extend the "third wave" by focusing on how complex routine operations are carried out. As Feldman (1989: 136) noted in her research routines depend on "… complex sets of interlocking behaviours held in place through common agreement on the relevant roles and expectations."

Even if "… great many routines are the product of explicit attempts to design efficient, effective work practices" (Pentland and Feldman, 2008: 235), it is not sufficient to design standard operating procedures to help workers carry out

[15] ERP (enterprise resource planning) is an integrated management of business processes, mediated by software and technology.

complex routine operations "… in the hope that performances will follow as Pentland and Feldman have convincingly argued (2008)" (D'Adderio, 2011: 225). An "extended third wave" is proposed to take the communities of practice into consideration not just the artifacts, which means that the actual work practice is of importance. It opens for the discussions in Section 3.7 on how organizational routines save knowledge and carry out the coordination role that makes simultaneity of action lead to regularity, consistency and predictability, closely connected to the aspect of control.

3.7 Routines Crossing Boundaries

Whether and how changes transform or break organizational routines when a function or an activity built up by organizational routines is outsourced and must cross the boundary of the organization is discussed using Ricoeur's 'hermeneutic of suspicion'. The phenomena of organizational routines are recontextualized (Robinson, 1995: 13) by questioning the organizational structure as limit for the analysis.

The transfer of the routine and the knowledge of it experienced and gained in one context to another context through outsourcing or insourcing will be recognized as such needed critical change. The "not-invented-here-syndrome" indicates that external routines do not always fit with those already in use within the firm (Macdonald, 1995: 560). The effectiveness of the transfer and the performance of the routines perform in the new context calls for an investigation of both the social and the material adaptation to the local context (D'Adderio, 2014). Problems of acquiring compatible external information lead to a logical preference for the use of internal information (Nelson and Winter, 1982) or to routines that can change due to external influence.

The organizational routine is seen as a source of inertia, and inflexibility. Here control procedures tend to resist mutation and struggle against changes. The control problem is related to the exchange and the fact that the inputs are heterogeneous. It seems relevant to ask how management control can handle what happens at the boundary of the organization when knowledge that resides inside the organizational routines is outsourced. "Control lapses may be the cause or effect or memory lapses …" as Nelson and Winter (1982: 115) express it. Procedures, delegated to an outside firm or specialist, could be a change in input

that overwhelms the existing routine, which may "… go seriously out of control" if the routine cannot adapt (Nelson and Winter, 1982: 115).

Routine change leads to varying outcomes. Conceptual and physical material already in use could be recombined or in the case of outsourcing an existing sub-routine could be replaced by a new and different one that performs the same function as the old one.

However, the learning capacity to create new knowledge is different from assimilation of existing knowledge. Integrating new knowledge that has been produced without any coordination with the context of a specific firm represents an almost insuperable challenge in decisions to outsource or backsource. Innovation and learning involve a change in routines so there is a suspicion that learning could be opposed to control. Routine change is not just a trial-and-error learning but a result of the revision of the underlying rules and a renewal and questioning of existing rules, which comes close to a 'double loop' learning that involves reflection in the sense of Argyris (1977a). Even if individual routines are slow to change, a variety of routines could be created to be the site of organizational learning like certain thinking pattern, built into the operating procedures and the minds of the employees of the firm. How routines perform at different levels of the organizational hierarchy is connected to different levels of skills and reveals that managers and employees at different levels see different dimensions of the firm's capability, i.e., different aspects of the routine. It could indirectly raise conflicts across levels and could therefore have impact on the transfer of organizational routine and thus decisions to outsource.

Important for outsourcing is how the organizational structures are affected by the new routines. There seems to be an inherent capability of every organizational routine to generate change in old established organizations in stable environments. Also, actors could perform in new ways and choose from the repertoire of actions that generate a stream of variations and exceptions of the routine. However, context itself may also change. A novel, more dynamic characterization of artifacts shows how artifacts can be understood as both social context and technologies that support change.

Important for further discussions on organizational routines that must cross a boundary due to outsourcing is that Turner and Rindova (2012) have noticed that organizations cannot establish two ostensive patterns, one of consistency and the other of flexibility with customers outside the organization, because customers are lacking connections with the internal routine participants. Processes with simultaneous ostensive patterns of consistency and flexibility need to be

established and sustained among routine participants, having artifacts as support. These and other studies on routine transfer are of importance for connections outside the organization as was shown in the SunLibrary case, described in Chapter 1. In the SunLibrary case, contract employees had to use time and effort on security check-up systems. It could have been expressed by Feldman (1989: 136) as "… complex sets of interlocking behaviours held in place through common agreement on the relevant roles and expectations."

Earlier research focused on organizations' stabilizing processes and structural properties (Slevin, 1973) to show how lessons of experience are accumulated within organizational routines and how they are recorded and shared in the organization (Levitt and March, 1996). In this study, the focus is on shifts in organizational routines when they are challenged by structural changes, like outsourcing and insourcing.

Organizations are assumed to learn by encoding interferences from history into routines that guide behavior to learn how to cope with and determine how changes occur when organizational routines are outsourced and cross the boundary of the organization. To understand organizational routines in an outsourcing situation an in-depth interpretation requires theoretical perspectives as frame of reference. Three perspectives of knowledge management, management control, and organizational learning are chosen as different points of view and studied in correspondence with the three aspects of knowledge, control, and learning. Considering the complexity of the organizational routine, the aspects of 'knowledge', 'control' and 'learning' are elucidated as three states of ideas, contained in the organizational routine and able to give the relevant appearance to a viewer.

3.8 Three Aspects and Corresponding Perspectives

The examination of the nature of the routine depends on the aspect, i.e., facet viewed or found important. Just as a jewel has sides or facets, most objects and ideas can be seen in different ways depending on which facet you are looking at.

> Theorists should aim to tell the truth in their theorizing, but they cannot aim to tell the whole truth. For to theorize is precisely to focus on those entities and relationships in reality that are believed to be central to the phenomena observed – and largely to ignore the rest. (Nelson and Winter, 1982: 134)

Knowledge, control, and learning as aspects of the organizational routine are here understood as three distinctive services that organizational routines could render, using Penrose's concept 'services that resources render' that look at the organization routine as distinguished from the resources *per se*. It will be argued that the three chosen aspects of knowledge, control, and learning are able to reflect the versatility of organizational routines.

The search for knowledge is seen by Penrose (1959/1995) as part of the normal operation of the firm and the routinization of activity constitutes according to Nelson and Winter (1982) the organizational memory in which the organization's specific operational knowledge is stored. The initial deal was that routines drive most organizational activities (March, 1981) and that knowledge of the routines is the heart of understanding the behavior of the firm (Nelson and Winter, 1982). It was assumed that knowledge is built up in the memory of the routine and that control is about coordination and as such intertwined with knowledge. The routine's explicit attempts to design efficient, effective work practices connects the knowledge aspect of the routine to the routine's role of coordination and control and motivate control as an important second aspect to emphasize. There is further a suspicion that control could be opposed to learning, because innovation and learning involves a change in routines that is contradicted by control, that presupposing stability not change. The routines embody learning, while building and modifying the content of the routines. It therefore brings the issue whether control executed through the organizational routines has the capacity to handle the complexity of the knowledge flows that could result in learning.

The organizational routines employed are claimed to explain the behavior of the firm (Nelson and Winter, 1982) and recognized as critical to learning, flexibility, and adaptation within organizations but also critical to transfer of knowledge and learning between organizations. The need to fit new information into existing knowledge and how it contributes to the development of a firm is strongly connected to organizational learning (Macdonald, 1995). Nelson and Winter (1982: 131) also considered a close interrelationship between knowledge and learning, proposing "… success at the innovative frontier may depend on the quality of the support from the 'civilized' regions of established routine". The absorption of new skills and capabilities is assumed to depend heavily on firm-specific characteristics and embedded knowledge (Cohen and Levinthal, 1990). The concept of path-dependence shows how organizational structures are not easily changed by individuals. However, both viewpoints 'capabilities' and 'practice' have different strengths and must be used to explain both individual and organizational motivations for change or resistance.

To interpret the chosen aspects of knowledge, control, and learning of the organizational routine the three theoretical perspectives of knowledge management, management control, and organizational learning are used to expand the interpreter's horizon. The theoretical perspective of knowledge management is emphasized as an important lever of the specific performance of knowledge in the business organization. The knowledge management perspective is an approximate representation, which makes the organizational routine appear as the relative aspect of knowledge used in the context of the firm.

The perspective of management control is chosen because it is assumed to help an organization adapt to the environment and deliver performance (Merchant and Otley, 2007). Routines are part of the organization's established control system of daily activities. Management control is a target for managerial effort. The usual mechanisms of internal control are operating routinely, and coordination is central. The management control perspective is used to show how formal, information-based routines and procedures help managers to have the organization adapt to the environment and deliver key results (Simons, 1995; Merchant and Otley, 2007) and how informal controls emanating from values and norms in the organization direct each bit of work in the organization (Otley, 1980; Itami, 1987).

The perspective of organizational learning shows how the need to fit new information into existing knowledge is connected to the development of the performance of the firm (Macdonald, 1995). The ability to absorb new skills and capabilities is assumed to depend heavily on firm-specific characteristics and embedded knowledge (Cohen and Levinthal, 1990). This close interrelationship between knowledge and learning was already emphasized by Nelson and Winter (1982: 131) stating that "… success at the innovative frontier may depend on the quality of the support from the 'civilized' regions of established routine."

Theoretical works from the three perspectives knowledge management, management control, and organizational learning are used in the subsequent chapters to conclude on the aspect of knowledge in Chapter 4, on the aspect of control in Chapter 5, and on the aspect of learning in Chapter 6.

4 A Knowledge Management Perspective

The theoretical perspective of knowledge management is emphasized as an important lever of performance. It is used to interpret the knowledge aspect of the organizational routine to expand the interpreter's horizon. Examining knowledge as the first aspect assumes that organizational routines bind knowledge and build organizational capabilities. The concept of knowledge and knowledge management is discussed. Finally, the knowledge aspect is interpreted as a critical 'is-not' element, which may lose value when outsourced from the original settings.

4.1 The Concept of Knowledge

The aspect of knowledge is chosen as a valid aspect of the organizational routine because traces of knowledge and work by human agencies are found in the organizational routine that also deals with how the coordination of individual and functional competence build the capabilities of the organization.

However, much of the knowledge that underlies routines is tacit knowing,[16] held by individuals and as such difficult to grasp. Polanyi (1958 in Crane and Bontis, 2014) claimed that all knowledge relies on personal judgements and that there is no explicit knowledge without tacit knowing. To recognize Polanyi's analysis (1967, 1968) the concept 'tacit knowing' is used and not 'tacit knowledge' because according to Polanyi, it is not different sides of knowledge because explicit knowledge relies entirely on tacit knowing, stating that

[16] Polanyi shows how a sentence can be understood by considering that tacit knowing simultaneously can pick up a whole set of data and combine them. Tacit knowing is "… the recognition of our powers to *know far more than we can tell*." (Polanyi, 1968: 30)

> …philosophic thought and the methodological principles of science have been misguided by not having a clear knowledge of tacit knowing. I shall take as my examples, first, the knowledge of other minds; second, universal terms; third, principles of explanation; and fourth, empirical generalization. (Polanyi, 1968: 34)

It means that also formalized knowledge that derives from rules relies on commitments. Polanyi denied that minds are reducible to collections of rules. Intellectual skills are driven by passionate commitments that motivate discovery and validation. According to Polanyi, a scientist not only identifies patterns, but also chooses significant questions likely to lead to a successful resolution. There are parallels to be drawn to innovators that risk their reputation by committing to a hypothesis, and, also to businessmen that, according to Penrose (1959/1995), believe that there is 'always more to know' about the resources of the firm.

The resourced-based view understands knowledge as an intangible resource of the firm that creates the capabilities of a firm, combined with other resources (e.g. financial and physical) (Grant, 2013). Knowledge as a resource can yield multiple, simultaneous benefits, but unlike other resources knowledge is not attainable with money alone and is time-consuming to develop (Itami, 1987). The competency-based or the resource-based theory looks at knowledge as embedded in routines and practices that the firm can transform in sustainable competitive advantage or in value of products and services (Grant, 1996).

A critique against the resource-based view of the firm is that it only holds if the 'the rules of the game' remain relatively fixed, i.e., without unpredictable changes of the environment or new technologies (Kraaijenbrink *et al.,* 2010: 353). The value of knowledge is thus seen as determined in the interplay with market forces (Loasby, 2000). The resource-based view is criticized of having difficulties coming to grips with processes of creation of new resources, and differs from the knowledge view of Penrose, who told us "… that firm growth is very much such a story of resource-learning" (Foss, 1997: 12). It is the purpose of the resources of the firm that is the real input, because "… the services yielded by resources are a function of the way in which they are used …" (Penrose, 1959/1995: 25). Knowledge, therefore, cannot be understood as an intangible asset, when

> … we begin to move away from the idea of knowledge as a kind of economic asset or commodity, whether explicit or tacit, individual or collective. We move closer to Penrose's idea of knowledge as the skilled process of leveraging resources, where that knowledge is permanently embedded in the organization … (Spender, 1996: 54)

The concept of knowledge is thus spit into tacit (implicit) and codified (explicit) knowledge. Tacit knowing,[17] the knowledge in an individual's head (Polanyi, 1967), is opposed to explicit knowledge; but the two are not sharply divided. While tacit knowing can be possessed by itself, explicit knowledge must rely on being tacitly understood and applied. Hence, all knowledge is either tacit or rooted in tacit knowing, which means that wholly explicit knowledge is unthinkable according to Polanyi (1966: 7). Using a text of a manual on how to drive a car, Polanyi illustrates how knowledge becomes tacit operations when the skill shifts into the back of the driver's mind.

All tacit knowing requires the continued participation of the knower and a measure of personal participation is therefore intrinsic to all knowledge. Tacit knowing and skills[18] are connected. "By a 'skill' we mean a capability for a smooth sequence of coordinated behaviour that is ordinarily effective relative to its objectives, given the context in which it normally occurs." (Nelson and Winter 1982: 73) This is a viewpoint that will have consequences for the discussion on organizational routines and especially on routines crossing the boundary of the organization due to outsourcing, because employees are not accompanying most outsourced activities.

Routines and capabilities seem to go beyond the individual talents and skills, when they work within collective settings, such as groups and firms (Felin and Foss, 2004). The reason is that the knowledge memorized in the mind of the individual does not cover the organizational memory housed in a project group, or stored in documents and computer files (Kjellström, 2001). It is said that the organization's specific operational knowledge is mostly stored in human heads, but also in procedures, computer memories, and production systems (Simon, 1991). Therefore, turnover of personnel results in loss of the human component, creating gaps of tacit knowing in the social networks with consequences for both outsourcing and insourcing as further discussed in Section 4.5.

[17] The structure of tacit knowing is similar to that of knowing a skill. "Textbooks of diagnostics teach the medical student the several symptoms of different diseases, but this knowledge is useless, unless the student has learnt to apply it at the bedside" (Polanyi, 1962: 603) Polanyi's expression 'tacit knowing' is therefore used for tacit/implicit knowledge in relation to organizational routines. The practical and the intellectual types of tacit knowing are found combined to some extent "… no statement can carry conviction unless it is understood, and all understanding is tacit." (Polanyi, 1962: 605)

[18] According to Nelson and Winter (2002: 32, footnote 8) 'skill memory' can be compared with the tacit dimension of knowing (Polanyi, 1966) and with "tacit knowledge" (Bacdayan, 1994).

> Over time, engineers acquire a store of knowledge about solutions to the specific kinds of problems that have arisen in previous project. When confronted with such a problem, the engineer does not re-examine all possible alternatives but, rather, focuses first on those that he or she has found to be helpful in solving previous problems. (Henderson and Clark, 1990: 16)

Companies become increasingly dependent on the knowledge of the employees and on their scientific and technical training. To confront the difficulties that arise from the complexity and diversity of the phenomena of knowledge, individual knowledge is separated from social and collective and tacit/implicit from explicit (Spender, 1996; Winter, 1998). Individual skills are often highly tacit in the sense that "… the aim of a skillful performance is achieved by the observance of a set of rules which are not known as such to the person following them …" (Polanyi 1962: 49) It means that the person could not provide a useful explanation of the rules.

> Definitions of terms bearing on external objects must always ultimately rely on pointing at things that are instances of what we mean. This is called an 'ostensive definition'; but this term conceals a gap to be bridged by an intelligent effort of the person using our definition. If he succeeds in bridging this gap, he will have discovered for himself something we have not been able to tell him. This is the sense in which I say that we can know things we cannot tell. (Polanyi, 1962: 602)

Highly tacit knowing is difficult to articulate in a way that is meaningful and complete (Teece, 2004). Tacit knowing is more difficult to transfer than articulated, complex is more difficult than simple, but knowledge, in use or context independent, is more favourable to transfer (Winter, 1998). On the other hand, highly articulable knowledge can be entirely communicated. The firm's increased use of explicit knowledge, i.e., scientific or established standards make them increasingly dependent on the scientific and technical training of the employees embedded in the firm's routine, norms, and culture (Spender, 1996). This is of strategic significance for knowledge transfer, because tacit knowing is an explanation to the stickiness found in transfer (Szulanski, 2003; Mooradian, 2005).

An individual's knowledge is said to move with the employee, where instead collective knowledge is either 'public good' or 'embedded' in the firm's routines. Discussions on knowledge highlight the dichotomy of tacit knowing, internalized by understanding and experience, and explicit knowledge, based on objects or rules, reminding of the performative and ostensive aspects of the organizational

routine (Feldman and Pentland, 2003), already discussed in Section 3.3. Management systems that refer to the ostensive aspect could best cope with codified and explicit knowledge, while less formal systems better deals with tacit, uncodified information embodied in goods or people (Macdonald, 1995).

The tacit-explicit distinction seems of importance in defining how knowledge management manages to manage knowledge resources (Massingham, 2014a, 2014b) and how the distinction and above all how tacit knowing has been handled and misinterpreted by the knowledge management tradition (Virtanen, 2013).

4.2 Knowledge Management

Knowledge management has generated a widespread interest since Drucker (1999) argued that knowledge had replaced tangible assets as the principle driver of economic growth. The knowledge economy explained that knowledge was the most valuable organizational resource, capable of creating sustainable competitive advantage (Grant, 1996). Knowledge management grew out of the downsizing strategy of the 1980s and the technological development, indicating how management through systems and IT-development tried to capture knowledge in the minds of the employees (Mårtensson, 2000; Liu and Deng, 2015). Knowledge management emerged in response to the pressure on organizations to make more efficient use of knowledge. The practice of knowledge management aimed at extracting sustainable organizational advantage from the knowledge residing in the heads of individuals (Serenko and Bontis, 2013; Crane and Bontis, 2014). There is a significant gap in the knowledge management literature between tacit knowing in transfer and organizational learning. To transfer tacit know-how such as 'best practices' is seen as complex and difficult to learn or replicate both externally between firms and internally across divisions (Venkitachalam and Busch, 2012).

The knowledge management perspective confirms how organizational routines function as a form of storage, retrieval, and transformation of knowledge, linked to the specific performance in the business organization. Knowledge is seen as part of the normal routine business operation (Penrose, 1959/1995). To create economic value, it is considered necessary from a knowledge management perspective following Nonaka and Takeuchi (1995) to have knowledge incorporated into organizational routines. A continuum covering tacit / implicit and explicit knowledge is proposed by knowledge management to highlight how

knowledge can be shared between the individual level, the middle management, and the top management of the organization. According to Nonaka and Takeuchi (1995) it is possible to convert tacit knowing to explicit knowledge, which makes knowledge transferable in formal, systematic language via reports and databases. Definitions of knowledge management tend either to understand "knowledge as an asset" or "knowing as a process" (Empson, 2001; Kjellström, 2001), a view also referred to as "product versus process view" (Massingham, 2014a: 1077).

Grant (2007) that examined around 60 papers from three major knowledge management journals[19] demonstrates that Polanyi's work on tacit knowing has been misinterpreted, especially by Nonaka and Takeuchi (1995) that just extended the personal knowledge to organizational knowledge in a corporate organisational setting. Transferability without participation of a knower is a misinterpretation of the texts of Polanyi that misguided the whole knowledge management literature and practice (Chauvel and Despres, 2002; Gourlay, 2006; Virtanen, 2013; Crane and Bontis, 2014; Philipson and Kjellström, 2019).

When knowledge is seen as an asset, it represents a key competitive resource that must be identified to develop mechanisms for managing knowledge. This 'asset or product view' implies that knowledge is a thing that can be located and manipulated as an independent object. It underlines encapsulated knowledge to indicate how thoughts and reflections are embedded as organizational knowledge in the design and function of artifacts, i.e., in technologies and products (Van den Berg, 2013). It focuses on how to manage the structural capital, like documents, management systems, data-bases, and lessons learned. It highlights the importance of artifacts over agency; like the 'third wave' of the organizational routine theory discussed in Section 3.6. It is a normative approach with the knowledge management systems of the firm as the unit of analysis. It is about sharing best practices and standard operating procedures, and about storage and retrieval. This view of knowledge management very much separates knowledge from the knower (Mentzas *et al.*, 2003).

On the other hand, looking at 'knowing as a process' is a descriptive approach that focuses on how knowledge is created and articulated between individuals in a social context. It emphasizes how to promote, motivate, encourage, and facilitate the communication process person-to-person, without trying to separate the knowledge from the knower. The process view consists of creation, dissemination and use of knowledge to achieve the goals of the organization (Davenport and

[19] Journal of Intellectual Capital, Journal of Knowledge Management, and Knowledge and Process Management (Grant, 2007: 174)

Prusak, 1998). It nurtures or guides the process of knowing and abolishes the idea of trying to capture and distribute knowledge (Mentzas *et al.*, 2003). Knowledge management is here seen as a social cmmunication process, which facilitates collaboration and cooperation, trying to overcome barriers between the different stages of the process with the support of technology or through organizing people (Oliva, 2014: 1056).

Knowledge management proposes that knowledge is the firm's most valuable resource of competitive advantage (Grant, 1996). In trying to explain where knowledge resides in the firm, two metaphors have dominated: On one hand, the explicit 'symbolic records metaphor' that keeps the knowledge stored in blueprint files, and on the other, the tacit 'knowledge specialist metaphor', where the professional is in hold of the knowledge (Nelson and Winter, 1982: 62). The idea that the tacit part of knowledge could convert to explicit transferable knowledge was used by Nonaka (1991) to explain the success of Japanese firms and had a major impact on the knowledge management theory (Nonaka and Takeuchi, 1995; Kjellström, 2001). Knowledge creation was shown to be based on the interaction of tacit and explicit knowledge. Nonaka's concept of tacit knowledge is rooted in action, tied to a specific context, where it could be acquired through experience and shared as well as distributed through the middle management level. Nonaka and Takeuchi hold that tacit knowledge can be converted from the individual to the organization because the context of business is best understood as explicit (Mooradian, 2005). However, people's attitudes, ethical dilemma, values or personal experience are tacit. Tacit knowledge may explain the stickiness in transfer of knowledge. Tacit knowing is an enabling condition of explicit knowledge. It could be compared with how the performative and ostensive aspects of organizational routines relate to each other and the performative aspects create and recreate the ostensive aspects.

Another pragmatic definition of Davenport and Prusak (1998) also combines knowledge as an asset and knowledge as a process, whereby organizational routines play a role.

> Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluation and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms. (Davenport and Prusak, 1998: 5)

Knowledge management is said to focus on practical knowledge building, renewal, and application of explicit knowledge processes, also "… technology developed to mine tacit knowledge of the users is of little value if it is unclear what exactly should be mined." (Virtanen, 2013: 119) This view has some theoretical problems. The possibility of simply sharing and distributing knowledge is said to be a misunderstanding of Polanyi's concept of knowledge, because tacit knowledge is not a separate category of knowledge. In Polanyi's theory tacit knowing is present in all knowledge while knowledge management tends to disregard the tacit dimension and point at the management dimension.

Furthermore, knowledge management disregards the external context. The knowledge-based approach, seeing the firm as a bundle of heterogeneous resources (Foss and Foss, 2000), focuses on how firms themselves can create and improve resources, rather than rely on resources that are purchased on the factor markets (Teece *et al.*, 1997; Grant, 1997). However, stored knowledge does not have much meaning until it is used by someone for some purpose, "…knowledge requires active participation of the knower and is hence knower dependent." (Virtanen, 2013: 122) Even the questions remain whether and how tacit knowing is regarded in the processes of creating or purchasing resources. To establish a difference that could be sustained, the competitive advantage must grow out of the entire system of activities (Philipson, 2016).

4.3 Managing Knowledge of the Firm

The knowledge-based approaches have argued that organizations have capabilities for creating and sharing knowledge that cannot be readily assembled through markets. Knowledge is built around the recurrent tasks performed by the organization and shaped by the paths chosen in the past. Organizations reproduce experiences that facilitate communication and understanding of relevant knowledge, which represent distinctive advantages at the market (Kogut and Zander, 1992, 1993, 1996; Nonaka and Takeuchi, 1995; Conner and Prahalad, 1996; Spender, 1996, 1998; Loasby, 1999). It is the very performance of activities within firms that creates new knowledge and the vital point is that firms are assumed to be better at creating knowledge than the market is (Penrose, 1959/1995).

A competency-based or resource-based theory of the firm looks inside the box to the knowledge embedded in routines and practices that the firm can transform in

products and services (Davenport and Prusak, 1998). It focuses on concepts like core competence (Prahalad and Hamel, 1990), core rigidities (Leonard-Barton, 1992), and core capabilities (Teece *et al.*, 1997). The reason for this is that assets, even when they are a manifestation of economics of scale in a mature market, seldom lead to competitive advantage, because assets that can be bought in the marketplace as commodities do not have the potential to differentiate the company as a basis for competitive advantage (Grant, 1996). Capabilities are often seen as associated with a specific plant or equipment of the firm and derive from the firm's coordination of individual and functional expertise (Nahapiet and Ghoshal, 1998). Knowledge of the firm is thus a system of coordination that combines relations and tasks into productive performance (Nelson and Winter, 1982).

To communicate and understand relevant knowledge the firm relies upon its accumulated experience (Zander and Kogut, 1996). The organization's knowledge and its information processing capabilities are shaped by the nature of the tasks and the competitive environment that it faces. It means that not even a portfolio of formal contracts can replicate the internal organization considering that: "Knowledge of social reality is always in practice related to social standpoint and interest and thus context-dependent." (Barnes, 1977: 3)

The search for knowledge is part of normal business operations (Penrose, 1959/1995). It is generated by the organizational routines and managerial processes reflecting the firm's history and experience. Firms are here seen as learning and innovating entities. The firm creates knowledge through generation and selection of skills, processes, and products in an internal procedure even if it reflects external factors (Loasby, 2000).

Knowledge of the firm should therefore be discussed in terms of both the competences of the individuals, i.e., the tacit knowing and the organizing principles that structure and coordinate individuals and teams i.e., the explicit knowledge. Technology, for example, is said to be firm specific; whereby knowledge about specific applications is based on tacit knowing but also on explicit knowledge largely cumulative within the routines of the firm (Zander and Kogut, 1995). However, files are costly to keep, and the knowledge of the firm is different from the knowing possessed by the individuals. Knowledge of the firm – seen as a functioning entity – must be characterized by a system of coordination that combines the relations and the tasks into the 'productive performance' (Nelson and Winter, 1982: 63). The firm is characterized by routine organizing (Powell, 1990) and personal relationships that provides for cooperation and collective action (Nahapiet and Ghoshal, 1998). However, the collective action

indicates a group level that should not be ignored, even if the knowledge-centered strategies usually tend to focus on knowledge creation at the enterprise-level and on knowledge accountability at the employee's level without considering dynamics at the group level (Wiig, 1997).

Also, the unknown and unused productive services rendered by resources become significant because businessmen according to Penrose (1959/1995) believe that there is 'always more to know' about the resources of the firm. Penrose used the expression "… cumulative growth of collective knowledge in the context of a purposive firm …" (1959/1995: xiii). She argued that the search for productive opportunity is the way businessmen think, and their experience and knowledge is thereby so closely associated with the circumstances of the business that both the firm and the external context must be embraced. Penrose (1959/1995) held the expectations of a firm and how it interprets its environment is a function of the entrepreneur and of how internal resources are operated. However, a firm's actions will also change the relevant environment as it acts. Various types of rights and controls associated with resources are also shared by other firms (Kraaijenbrink *et al.,* 2010), which will have consequences in an outsourcing situation, further discussed in Section 4.5.

The internally generated knowledge within firms is said to be needed to supply firms with the tools to achieve resource-creation and efficient allocation. The knowledge structures consist of individual 'schemata', which are representations of persons, things, and events as well as 'scripts' consisting of frequently occurred events that have been stored in the memory (O'Reagan and O'Donell, 2000). Firm specific routines are expressed as 'difficult-to-imitate combinations of organizational, functional, and technological skills', and elucidate knowledge as an important aspect of the routines (Penrose, 1959/1995; Nelson and Winter, 1982; Prahalad and Hamel, 1990; Teece *et al.*, 1997). Routinization is thereby the most important form of storage of an organization's knowledge (Nelson and Winter, 1982), which will be further discussed in the next Section 4.4.

4.4 Managing Knowledge of the Organizational Routines

Most organizational activities are driven by routines (March, 1981). In organizational routines, the essential coordinating information is stored and

remembered 'by doing' and 'by keeping'. Routines play the role of memory, concerned with both storage of specific operational knowledge and transfer of organizational skills and knowledge. The performance of a routine requires interpretation and coordination of messages that are specific to the organization and indicates a strong connection between knowledge, routines, and context. Differences in coordinative routines have significant impact on variables like cost, lead time, and quality (Teece *et al.*, 1997). Also, the organizational context matters in form of equipment, structures, and work environment of order, durability and shared experience (Penrose, 1959/1995; Nelson and Winter, 1982). However, no single expert, or no documents could fully capture how routines are interwoven with each other. Nor is the organizational context a fixed background, because it constitutes the performance of the organizational routines.

The organizational routines are based on successful performance of the past (Nooteboom, 2000). Successful routines are adapted and retained; inferior routines are abandoned. Knowledge is related to activity of the routine, but also to feedback-correction, when deviation occurs (Barnes, 1977). To support knowledge, organizational routines include forms, rules, procedures, and strategies around which the organization is built and through which it operates, capable of surviving considerable turnover (Levitt and March, 1996).

> It should be noted, however, that personnel transfers are limited as a means of obtaining competencies because many skills and competencies are not vested in singled individuals but reside instead within the collective skill sets of many employees or within special routines embedded more broadly in the firm's operations and knowledge base (Nelson and Winter, 1982). (Oliver, 1997: 707)

Knowledge is generated by communication, coordination, and search procedures that reside in the organizational routines. Procedures often consist of a learned repertoire of behaviors (Cohen and Bacdayan, 1994). 'Procedural' knowledge, e.g., know-how, is the practical, experience-based knowledge concerning well-practiced skills and routines (Singley and Anderson, 1989). The distinctive skills within an integrated set of activities result from different ways of organizing knowledge. The knowledgeable design of the organizational routine (also called a script) presents a potential lever to enhance organizational performance (Inkpen and Crossan, 1995). By using a model of organizational routines that involves multiple participants and interdependent actions, like for example an enterprise resource planning (ERP) system, the focus is adjusted to highlight alterations and inventions that people undertake to make the routines work (Feldman and

Pentland, 2003). However, the underlying tacit knowing held by individual actors is often partially inarticulate, and therefore difficult to communicate.

Nelson and Winter (1982) view the memory of the organization as different from both the individual memory and the formal records. Detailed routines known to individual workers may function smoothly but may not be shared or even run counter to the organization's formal work rules. It confirms the view of organizational knowledge as fragmented, distributed, and embedded in organizational routines indicating that a 'whole versus parts' problem arises when organizational knowledge is involved, i.e., details can be decentralized but a coherent view of the whole is difficult to share. Here, it must be recalled how Polanyi's tacit operation of knowledge and skills requires the participation of the knower, which would have impact on outsourcing.

The organization tends to prefer use of internal information (Nelson and Winter, 1982), because external information does not always match the use within the firm. Information produced without coordination with the firm is the most difficult to integrate ('the not-invented-here syndrome') (Macdonald, 1995: 560). As knowledge of the firm is shaped by the positions and paths chosen in the past, it seems quite difficult to replicate or change. However, changes and influences resulting from pressures of the external world could alter the significance of the organizational routines, which is of interest for outsourcing and insourcing.

4.5 Knowledge in the Outsourcing Situation

Knowledge, affected by the firm's experience and embedded in organizational routines, is inert and hard to change (Henderson and Clark, 1990). Tacit knowing cannot be communicated, understood, or used without the individual of the knowledge creation (Lam, 2014). In a situation, where it is important to drive knowledge sharing in multiple social contexts, it is necessary "… to stress the critical role of individuals." (Lam, 2014: 96) Even more, few organizational routines are 'stand-alone' capabilities in the sense of being simple, independent, and easily transferable (Winter, 1998). Routines are often layered and there are often standardized routines established for how the team is supposed to run projects in firms (Kjellström, 2001). Firms tend to prefer already known routines. Capabilities are believed to lose value when transferred from their original settings (Collis and Montgomery, 1995). The inertial qualities of routines tend to minimize the possibility of flexibility and change (Feldman and Pentland, 2003).

Routines become 'contaminated' with extraneous, historically specific knowledge and arbitrary components that preserve artefacts of old technology. By analogy to individual habits, routines are seen as the antithesis of flexibility (Nelson and Winter, 1982).

The ability of a firm to recognize the value of new, external information, is said to be critical to its innovative capabilities. This capability is labelled 'absorptive capacity' and is a function of the firm's level of prior related knowledge. This is the case when outsourcing some functions or activities, and even more when backsourcing.

> To understand the sources of a firm's absorptive capacity, we focus on the structures of communication between the external environment and the organisation, as well as among the subunits of the organisation, and also on the character and distribution of expertise within the organisation. (Cohen and Levinthal, 1990: 132)

Networks, within and between firms, are important generators of competence and knowledge, created and shared between firms with different capabilities (Cohen and Levinthal, 1990). Even if an organization's absorptive capacity depends on the absorptive capacities of its individual members some aspects are distinctly organizational. Some authors understand the firm's capability to create and share knowledge as deriving from the organizing principles of the organization, by which knowledge is structured (Napiet and Ghoshal, 1998). Absorptive capacity refers not only to the acquisition or assimilation of knowledge by an organization but also to the organization's ability to exploit it (Bontis, 1999). Knowledge is seen as generated out of the routinized business operation, where organizational memory and control systems are normal parts of the firm; stored in human heads, but also in procedures, computer memories, and production systems (Simon, 1991). Creation of new knowledge is thereby seen as determined by the prior possession of relevant knowledge. Furthermore, relevant knowledge is connected to the productive services rendered by the resources of the firm through the organizing principles of the organization. This means that the behavior of firms could be explained by the routines employed (Nelson and Winter, 1982). However, the importance of unknown and unused productive services of the resources used (Penrose, 1959/1995) cannot be ignored, which will be further discussed in Chapter 6 on organizational learning.

Experiences and increasing knowledge of the productive possibilities may become part of the stock of knowledge and consequently alter the significance of the

resources to the firm. "Many developments in technological knowledge become available in the form of the capital equipment they buy." (Penrose, 1959/1995: 79) Even if a change might have been intended to create stability, the dynamics of coping with sequential connections force the combination of technologies and actors to change (Ford *et al.*, 1998). However, using external consultants or outsourcing partners to share knowledge and design work could be beneficial for both parties if they manage to avoid the danger of external dependency (Korac-Kakabadse *et al.*, 1998). Various types of rights and control associated with resources, also shared by other firms, may create dependency because technologies are connected into sets of complementary technology, equipment, and knowledge (Kraaijenbrink *et al.,* 2010).

The necessary technical and management competences could be purchased, but sometimes they must be rebuilt through investments or institutional arrangements that while time require tacit knowing, i.e., the skills and judgments of experienced workers (Davenport and Prusak, 1998). According to Polanyi, knowledge-creating activities always take place within and between humans. These experiences provide a historical perspective from which to view and understand new situations and events. In that sense, knowledge is seen as built around the recurrent tasks performed by the organization (Cyert and March, 1963; Lawrence and Lorsch, 1967; Nelson and Winter, 1982; Henderson and Clark, 1990).

Change in knowledge structure and available agency will affect the survival of the organizational routines (Feldman and Pentland, 2003). Also, individuals may resist knowledge transfer, when they perceive "… a fundamental difference in knowledge base between the firms" (Empson, 2001: 814). Even so, turnover of personnel, leaving the company with their accumulated knowing and experiences, creates gaps in social networks, which are important for the possibility to capitalize on the knowledge of others (Ford *et al.,* 1998).

Evolutionary theories predict that the characteristics of the routines themselves affect their survival (Nelson and Winter, 1982). Relatively small change can have an impact long after the period, in which they occurred (Levitt and March, 1996). It is therefore important to consider how outsourcing activities might impede, or even decrease, the intangible resource level (Sanchez *et al.*, 2000). When differences occur, such activities tend to isolate them, which "… literally create their own constraints." (Weick, 1979: 164) Constraints, also to the extent that success confirms the firm's strategy, i.e., managers tend to believe that doing more of the same is the surest way to prolong success. In that sense, success reduces genetic variety (Hamel and Prahalad, 1994). What can firms then do to change the genetic coding? In practice, they must leave some space in the administrative

procedures not using the same planning format in every business (Hamel and Prahalad, 1994). It may mean that lessons of the past are not the best and only way to learn. Competence might impede change and development, e.g. 'core competence' might turn into 'core rigidity' due to inadequate technical systems or, more importantly, due to problems with the skills and knowledge base dimension (Leonard-Barton, 1992: 121).

On the other hand, uncertainties build and modify the routines switching activation among the relevant routines, whereby learning is embodied in the routines (Nelson and Winter, 1982; Stinchcombe, 1990; Cohen and Bacdayan, 1996). Regarding outsourcing and insourcing activities, relevant knowledge and skills may give rise to creativity, permitting the sorts of associations and linkages that may not have been considered before (Cohen and Levinthal, 1990).

The possibility of organizational learning due to outsourcing considers how uncoupling from old rationales could result in re-coupling to new, e.g. unlearning past organizational routines and learning new routines (Starbuck and Hedberg, 1977; Hedberg, 1981; Starbuck, 1983; Greenwood and Hinings, 1988). It means that prevailing organizational routines do not mark the edge of the feasible but point at change to be further discussed as organizational learning.

4.6 Conclusions on the Aspect of Knowledge

To conclude, the aspect of knowledge – looked upon through the perspective of knowledge management – has shown that knowledge is an important framework for evaluating and incorporating experiences and solutions (Davenport and Prusak, 1998). Knowledge of the firm must be discussed in terms of structure and coordination between individuals and organizing principles. Following the evolutionary theory of the firm, the capabilities of a firm lay primarily in the organizing principles, by which individual as well as functional expertise is structured, coordinated, and communicated. Firms are social communities, which use their relational structures and shared coding schemes to enhance the transfer and communication of new skills and capabilities (Zander and Kogut, 1995: 76). Information technology is the pipeline and storage system for knowledge exchange. Knowledge management is management's attempt to capture knowledge in the minds of the employees through systems and IT-development (Mårtensson, 2000). This is a way of making more efficient use of knowledge that resides in the heads of the individuals (Serenko and Bontis, 2013; Crane and

Bontis, 2014). Knowledge management therefore tries to make tacit knowing transferable into formal, systematic language via reports and databases. These management systems refer to the ostensive aspect of the organizational routines, which best cope with codified and explicit knowledge. On the other hand, less formal systems better deal with tacit, uncodified information embodied in goods or people (Macdonald, 1995), because all tacit knowing requires the continued participation of the knower with consequences for outsourcing. Some sort of measure of personal participation is therefore intrinsic to reach the knowledge aspect of the organizational routines.

To deliver a new value proposition to customers, Philipson (2016) found that it was necessary to completely reorganize the embedded explicit and some parts of tacit knowing of the personnel on whose tacit knowing the firm is depended.

> This is fundamental critique of knowledge management (Nonaka, 1991, 1994; Nonaka *et al.*, 2000; Nonaka and von Krogh, 2009). It is very likely that a large part of tacit knowing cannot be externalized, and, hence, the quest to liberate the firm from employees by building explicit knowledge is most probably a 'cul-de-sac'. (Philipson, 2016: 141)

It will have consequences for the further discussion on organizational routines crossing the boundary of the organization due to outsourcing, because employees are seldom accompanying outsourced activities. Many capabilities therefore lose value in form of tacit knowing when transferred from their original settings (Collis and Montgomery, 1995). Polanyi's theory is based on 'knower-dependency of knowledge' which means that feelings and intuitions are necessary elements of knowing (Virtanen, 2013).

In this sense, knowledge management tends to disregard the context. Knowledge, studied through the knowledge management perspective, contradicts the important influence that knowledge is assumed to have on functions or activities built up by organizational routines. Nor does knowledge management explain what happens when routines are outsourced and cross the boundary of the organization. The fact is that knowledge is created and articulated between individuals in a social context. Knowledge often becomes embedded "… not only in documents or repositories but also in organizational routines, processes, practices, and norms." (Davenport and Prusak, 1998: 5)

Knowledge of the firm is a system of coordination that combines relations and tasks into productive performance (Nelson and Winter, 1982). This should not be ignored, even if knowledge-centered strategies tend to focus on knowledge

creation at the enterprise-level and may account for knowledge at an individual level without considering group dynamics (Wiig, 1997).

It has been shown that technology could not replace the skills and judgement of an experienced, knowledgeable individual.[20] If businessmen believe that there is 'always more to know' about the resources of the firm, and that such knowledge improves the efficiency, then the unknown and unused productive services rendered by resources become of considerable importance (Penrose, 1959/1995). The belief that these services exist acts as an incentive to acquire new knowledge about a resource and to shape the scope and direction of the search for tacit knowing, which could be assumed to cause inter-firm differences in performance.

[20] *Artificial Intelligence* (AI) is currently the key technology that brings about challenges and questions in organizational change. It threatens to objectify and alienate humanity, which could result in social transformation. However, it remains to be studied in what way technology could replace the judgement of experienced employees. Further discussions by Kaplan (2016) and Boyd and Holton (2018) are recommended.

5 A Management Control Perspective

Considering a perspective is to choose a frame of reference as a point of view. This theoretical perspective of management control is the domain that regulates and controls transactions and boundaries of the firm. The perspective is classified in different discourses that elucidates the concept of control and the control aspect of the organizational routine. In this examination, control is assumed to be the aspect of organizational routines that determines what can occur, how it is carried out in a regular, predictable, and stable manner, and who is accountable.

5.1 The Concept of Control

The term 'control' connotes domination. Control emphasizes the exercise of power, authority, and influence. Control rules, or limits actions and behavior. The idea of regulation and monitoring is prevailing, in line with the original French *contrôle* meaning 'inspection' to ensure that desired ends are attained.[21] In 1916, Henri Fayol formulated one of the first definitions of control related to management structure:

> Control of an undertaking consists of seeing that everything is being carried out in accordance with the plan which has been adopted, the orders which have been given, and the principles which have been laid down. Its object is to point out mistakes in order that they may be rectified and prevented from recurring. (Fayol, 1949: 107)

[21] *Control* from Fr. contrôle, older form *contre rolle*, from Med. Lat. contra-*rotulus*, a counter roll or copy of a document used to check the original (1911 Encyclopædia Britannica, Volume 7).

The essence of control suggests that structure *per se* is a control mechanism. Control mechanisms could also consist of technological requirements (Woodward, 1965; Thompson, 1967), or structure due to the nature of the environment (Lawrence and Lorsch, 1967). The term control is proposed to cover any process that determines, or intentionally affects, what others will do. Control is thereby viewed as a process of regulation and monitoring for the achievement of organizational goals (Das and Teng, 2001). Definitions of controls (Ouchi, 1979; Abernethy and Chua, 1996; Flamholtz *et al.*, 1985; Merchant and Van der Stede, 2007; Malmi and Brown, 2008) are generally based on the assumption that someone (senior manager, top management, or dominant coalition) seeks to control the behavior of others (middle management, teams, or employees). Essential seems to be the question about what to control or expressed as: "… who is controlling; following what set of interests and what is being controlled in what nature of organization." (Whitley, 1999: 508)

Control must be discussed in the light of knowledge and the nature of actors, or the objects controlled (Otley *et al.*, 1995). Based on the object of control, there are different types of controls (Ouchi, 1979, 1980; Merchant and Van der Stede, 2007): Result or output controls, controls of action or behavior of employees, and social, or culture controls that select and train highly motivated people. Behavioral constraints could be physical or administrative and involve a restriction of the decision-making authority and of the accountability.

Accountability also demands competence (Choudhury, 1986; Merchant, 1998). The word 'accountable' indicates both 'control' and 'knowledge' in the sense of being knowledgeable of being responsible.[22] Actions, whether determined to be taken, or not to be taken, are often communicated through codes of conduct, or institutionalized social practices, like organizational routines. To be held accountable sharpens the sense of how to act in social practices and renders local management more visible. It also "… serves to sharpen one's sense of self and one's actions" (Roberts, 1991: 356).

In the 'planning and control' framework, control plays the role of checking and making sure that activities are carried out according to a plan; the term control covers both feedback and feed forward connotation. Feedback in the sense of controlling *ex post* to explore alternative ways to improve future performance: Like

[22] *Accountable*, dated the 14th century, according to Merriam Webster's collegiate dictionary indicates two meanings, hinting at both 'control' and 'knowledge': subject to giving an account, referring to answerable, which means liable to be called to account, i. e., responsible, and capable of being accounted for, referring to explainable, to be made known, understandable or intelligible.

changing goals, means and methods, decision making, predictions, operations, or reward system (Horngren *et al.*, 1999). Feed forward, i.e., the *ex ante* form of control, indicates the planning element and trust in capabilities and knowledge to predict or promote goal congruence (Argyris, 1964; Likert, 1967; Mitchell *et al.*, 1998).

Control, used in a proactive way in managing change, opens new possibilities of learning about the organization and how it interacts with its environment (Otley, 1994; Cobb *et al.*, 1995; Jönsson, 1996a). Control does not only determine how an exchange is to be governed, it also determines whether an exchange should take place (Tannenbaum, 1968), which is of importance for the outsourcing decisions. Various forms of control include various forms of responsible autonomy and there is a need to match control procedures to the context in which they operate (Otley and Berry, 1980), which will be discussed in the following sections.

5.2 Management Control Systems

Management control systems deal with organizational performance, aimed at achieving defined goals within an established timetable. It was the corporate business enterprise that created the context for the modern managerial systems and exhibited what Alfred Chandler described as 'administrative coordination' (Hoskin, 1996: 269). Management controls systems are rules, practices, values and activities that "… management put in place in order to direct employee behaviour" (Malmi and Brown, 2008: 289). It is concerned with coordination, resource allocation, motivation, and performance measurement in ways "… in which management can change the organization (e.g. its technology, personnel, information, behaviour) to respond to exogenous and uncontrollable environmental disturbances." (Cooper *et al.*, 1989: 247)

Management control system must also be attentive to both problems of immediate goal achievement (efficiency) and future goals (adaptation and experimentation). It could be defined as a system consisting of

> … organizational information seeking and gathering, accountability and feedback designed to ensure that the enterprise adapts to changes in its substantive environment and that the work behaviour of its employees is measured by reference to a set of operational subgoals (which conform with overall objectives) so that the discrepancy between the two can be reconciled and corrected for. (Lowe in Otley and Berry, 1980: 234)

Anthony's original approach in 1964 defines management control systems as "... the process by which managers ensure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives" (Anthony and Govindarajan, 1998: 67). It includes strategic planning, management control, and operational control. Management control system has its feedback function that monitors outcomes and corrects deviations from pre-set standard of performance as well as prediction that is a central part of controls at all levels of the organization (Lowe and Puxty, 1989).

Otley (1994) holds Anthony's definition for being obstructive to the development of the field of management accounting because both internal and environmental changes require flexibility, a wider focus, and the willingness to learn. Simons' framework (1994: 172) distinguishes four different control systems:

- The 'diagnostic systems' are the formal information systems as feedback to monitor organizational outcomes, detect and correct deviations from pre-set standard of performance, e.g., 'single loop' learning.
- The 'beliefs systems' are used by top managers to define, communicate, and reinforce the organization's core values in credos and mission statements, to empower and commit the individual workers.
- The 'boundary systems' set the minimum standards for both the strategic choice and the business conduct; may hinder adaptation to product, market, technology, or environmental changes.
- The 'interactive systems' are used to involve top managers in the decision activities of subordinates with data provided by underlying systems to focus on, stimulate, and facilitate 'double loop' learning, as will be further discussed with the organizational learning perspective in Chapter 6.

More comprehensive frameworks (Otley, 1999; Ferreira and Otley, 2009) were asked for and a balance between the four control systems was required; beliefs and interactive control systems that stimulate inventive and innovative action and could, according to Van der Meer-Kooistra and Scapens (2008), to be addressed in lateral control of relations between organizations in different outsourcing and insourcing situations, which will be further discussed in Section 5.5 on outsourcing.

A management control system appears to be important in building credibility, because it structures and communicates knowledge in the form of expectations across the organization. Simons' levers of control framework provide a broad perspective and his study (Simons, 1994) confirms that formal management

systems are important as levers of change and thus actively used by top managers. However, his framework focuses on top level management and does not place enough emphasis on controls of people's behavior at lower levels of the organization.

Accounting and information systems shape perceptions and provide structures around which control processes are built (Collins, 1982; Dent, 1990). Accounting information in organizations is the most important "… authoritative and telling means whereby activity is made visible" (Roberts, 1991: 359). It provides the basis for intervention and control by central management. With the justification to improve bottom line results, tighter control procedures, greater amounts of detailed information and emphasis on short-termism are introduced (Ezzamel *et al.*, 1997). It makes "the invisible world manifest", while extending each member's knowledge of "… a customary mode of thought or performance" (Cohen, 1982: 5). Such systems contain values and beliefs about the domain of an organization's activities, the principles of organizing, as well as the criteria for evaluating the organization's performance (Greenwood and Hinings, 1988).

The problems associated with the traditional management control systems are mainly the result of underlying old conceptions. For a long time, the definition of management control systems was narrow, leaving no room for adjustments that was required because of internal and external changes and environmental developments. Shields (1997) and Burns and his colleagues (1999) argue that changes in the environment cause changes within the organization, which in turn cause changes in management control systems practices. Otley (1999) argues that in an environment of continuous change, management is forced to adapt itself constantly, which requires the active involvement of a larger number of organizational participants. It follows that a management control system must include a wider range of variables to constrain the ability for different groups of participants to act than partial models of organizational behavior traditionally do (Otley and Berry, 1980). The group as a level of analysis is almost always absent in management control systems. Organizational control was an attempt to increase performance of individuals and groups in ways that lead to the attainment of the organizational goals (Flamholtz *et al.*, 1985).

Management control systems were challenged by shifts occurring from production to service and knowledge during the 1980s, with new outsourcing operations that changed the business environment. The entire business chain, made up of processes, activities, and organizational routines, was affected and brought forward new performance measures to balance the overly financial view (Johnson and Kaplan, 1987; Eccles, 1991). The service and knowledge economy

also required lateral relations with suppliers and customers, whereby the conventional boundaries of time and space were challenged, and new monitoring of routines and competencies were called for. The widespread interest in organizational culture in the 1980s re-opened the discussions on trust and introduced social control systems as valuable alternatives to bureaucratic control. Social knowledge, known as the value system of a counterpart (Ouchi, 1980; Tolbert, 1988 in Sohn, 1994), will be further discussed as a control mechanism, when considering transactions and economic exchanges in outsourcing.

5.3 Control in the Firm

Control in the firm includes selection and training, socialization processes, bureaucracy, formalization, and the measurement of outputs (Ouchi and Maguire, 1975) or expressed as "… almost everything in the organization is included as part of the overall control system" (Merchant and Otley, 2007: 785). The question is whether control has developed to cope with changes from manufactured resources to immaterial knowledge, from inside of the organization to across the boundaries of the organization, and possibly from feedback to feed-forward, adding also the intra-organizational perspective versus the inter-organizational.

Management control is described as highly dependent on human behavior; requiring subjective judgment and reflection, also known as double-loop learning. Operational, or technical control, on the other hand, is related to subunits, or activities of subunits. Here logical rules analogous to the single loop learning of a thermostat are applied and the employee influence is of little importance. Means of measuring results as well as means of predicting the likely outcomes must be available, but also relevant alternative choices of action. The difficulties with prediction measures are that they must consider both internal processes and the interaction between the organization and its environment. The controlling process states objectives in terms of value judgements about the system to be controlled. Organizational objectives are often vague and change over time and have various interest groups, which complicate both measures and predictions, and constrain the ability to act (Otley and Berry, 1980).

Two forms of accountability are manifest within organizations: The formal, hierarchical accountability and the informal engagement of personal understanding in lateral ties to secure the routine interdependence of action

(Roberts, 1991). The important role of accountability has often been neglected, even if it ranges over space and time, focusing both on future potential and on past accomplishment (Hoskin, 1996). New centers of responsibility and accountability that crisscross different functions are needed to identify definite boundaries both within and between organizations (Ezzamel *et al.*, 1997). Traditional management control systems would be too inflexible for the types of lateral relations that will be needed in exchange relationships like outsourcing (Van der Meer-Kooistra and Scapens, 2008).

> In hierarchical forms of control, understanding is typically "imposed" in a top-down way, whereas lateral forms of control promote the bottom-up creation of a "jointly held conception of the work" (Okhuysen and Bechky, 2009, p. 489). (Goretzki and Messner, 2016: 118)

In setting and monitoring performance targets, the organization must rely on the knowledge agenda of the transformation process that is emphasized to promote exploratory behavior. Trust could be seen as a substitute when behavioral dimensions of control require a response that is different from the typical hierarchical accountability and the formal control mechanism. The *ex ante* form of control promotes goal congruence and suggests trust as the noneconomic governance mechanisms to increase economic efficiency in exchange relationships (Argyris, 1964; Likert, 1967; Ouchi, 1977, 1980; Libby and Luft, 1993; Mitchell *et al.*, 1998).

'Socializing' forms of accountability emphasize the need for co-operation, but the problem is the integration with the 'hierarchical' forms of accountability. Socializing forms operate informally and tend to flourish only in the informal spaces of the organizations (Tolbert, 1988 in Sohn, 1994). The assumption of trust in capabilities and knowledge is based on moral standards or honesty of expectation, embedded in transactions. It demands competence and involve risk taking because "… trust as a form of accountability takes time to establish" (Jönsson, 1996b: 103). The question of trust in an accountability relationship implies that the agent is obedient in fulfilling the expectations of the principals, "… trust in effect is defined as obedience to authority"(Ezzamel and Willmott, 1992: 35). Trust serves to conduct and facilitate transactions, but is not in itself a control mechanism in the sense of regulation (Sako, 1992; Das and Teng, 1998). Inter-organizational trust could develop between organizations in transactional relationships, even if it may be complicated if there are changes in staffing (Vosselman and Van der Meer-Kooistra, 2006).

> In fact, to trust and to control seem to be two completely different kinds of approaches. When it is possible to fully trust a partner, there is no need to control its behavior. Control comes into play only when adequate trust is not present. (Das and Teng, 1998: 495)

Traditional research has seen control as the exercise to monitor divisions as units of accountability in the decision-making structure (Ezzamel *et al.*, 1997). If such units show productivity in terms of criteria determined by senior management, they are trusted and free to act because hierarchical relations within organizations are looked at from the senior management viewpoint (Van der Meer-Kooistra and Scapens, 2008). The handling of information is itself an instrument of control within the organization. There is a need to balance trust and control. Control can be necessary in the early stages of a relationship to create trust, but, later, insistence on high levels of control could destroy trust by signaling a lack of trustworthiness (Macdonald, 1995). People in organizations construct trust to produce some degree of predictability. Even if predictability cannot come from organizational routines, individuals must be predictable in their conformity to these routines (Garsten and Grey, 1997; Grey and Garsten, 2001). Trust could be installed within organizational routines, being the ones bestowing predictability and reliability, whereby trust could be analyzed in terms of resources, norms, and knowledge (Kramer and Tyler, 1996; Tyler and Degoey, 1996).

Taking decisions makes a manager accountable for performance; however, in today's knowledge intensive industry the executive may not be the person with best overview and competence (Tengblad, 2000). Through team-based production, less specialized division of labor, job rotation, consensual decision-making, and an emphasis on cooperation, management must rely less on formal controls and more on the internalization of values. Responsibility for productivity is thus imposed on the individual knowledge worker, presupposing knowledge workers that manage themselves (Drucker, 1999). To track the responsibility of the process, value delivery must create measures and support the employees in achieving the firm's goals (Ouchi, 1979; Flamholtz *et al.*, 1985; Otley *et al.*, 1995; Berry and Otley, 1996).

It will be discussed whether organizational routines and knowledgeable everyday actions can be flexible enough to smooth the problems of the formal rule systems like the management control system so that the outcome performance of the controller function will be satisfactory (Lukka, 2007). However, the very presence and operation of a centralized system that governs the repetitive day-to-day activities may prevent employees from taking day-to-day responsibility for their

activity and hinder them to make changes that would increase productivity.[23] This means that there is a need for the empowerment of the lower levels of the organization. The management control must suite work groups at all levels. Both authority and responsibility must be given, so that lower-level managers are encouraged to take necessary actions to grant the cooperation of employees in achieving organizational goals (Flamholtz *et al.*, 1985). Efforts to gain and share knowledge is important to evoke action for the controlling manager (Minzberg, 1997). The rationale behind the delegation of authority is that "…'workers' control' offers a more direct and effective method of reducing wastage and improving quality." (Ezzamel and Willmott, 1992: 30)

The two forms of accountability operate in opposition with each other; obligations of the hierarchical form of accountability may undermine the loyalties and support of the socializing forms of accountability (Roberts, 1991). Individuals seem to be "… constantly confronted with a choice between ties of loyalty to colleagues and their individual interests in the hierarchy" (Roberts, 1991: 364). New heuristics strive for continuity and efficiency of the organizational routines that build up the organizational response systems (Levitt and March, 1996; Weick, 1996; Vermaak and Weggeman, 1999; Feldman, 2000). Controllers implement work practices and systems of accounting, but sometimes knowledge is produced by the technological systems and other patterns are accepted by the organizational members as organizational rationality (Lowe, 2001; Kjellström, 2009). However, necessary technical and social skills could be difficult to develop among controllers that are relying on authority from formal hierarchical structures that impede involvement (Chenhall and Langfield-Smith, 1998). Such concerns disrupt team-working, undermine boundary-spanning activities, and inhibit the degree of co-operation required to fulfil designated accountabilities for the implementation of the strategy (Frowa *et al.*, 2005). Even if the 'controllability principle' states that people should not be held accountable for what they cannot influence (Choudhury, 1986; Merchant, 1998), there is a need to establish shared responsibilities that create engagement in boundary-spanning activities and team-working. However, the managerial rhetoric of emancipation and empowerment might obscure a reality of increased managerial control with new technology and new forms of coordinating work, *e.g.,* the penetrating gaze of the electronic eye (Sewell, 1998; Jermier, 1998). In discussing organizational routines, bonds between people and technology are explained as an organizational reality to

[23] See Jönsson's case studies in Ezzamel and Willmott, 1992 and in Parker and Stacey, 1994.

control knowledge to accumulate invisible assets (Itami, 1987; Johanson *et al.*, 2001).

5.4 Control in Organizational Routines

"Structural arrangements, including rules and regulations, are the heart of formal control." (Das and Teng, 1998: 506) The control function is seen as "… a regulatory process by which the elements of a system are made more predictable through the establishment of standards in the pursuit of some desired objective or state" (Leifer and Mills, 1996: 117).

Control is the exercise that influences and coordinates the efforts of people to accomplish certain goals. Design for control involves establishing fixed rules, routines, and procedures for defining a control domain (Dunbar, 1981). A control domain that regulates and controls transactions must establish routines that uphold and transmit activities as well as changes. Rules represent the formal domain of an organization, referring to the formal ways in which 'things should be done'. Such formal ways are necessary to coordinate and give coherence to the actions of individuals, or groups (Burns and Scapens, 2000; Lukka, 2007). Rules become changed by explicit decisions by authority. Routines, on the other side, are part of the informal domain and become changed in the cumulative process of daily action. Commitment to existing rules, routines, and procedure seems to increase as they have been used more often to interpret more information.

Behaviors in organizations are based on routines, also called 'patterns of current practice' (Teece *et al.*, 1997: 518). The routine operation is an abstract 'ways of doing things' (Cyert and March, 1963; Nelson and Winter, 1982; Powell, 1990). The reason why "… routines seem so characteristic of organizations is that they free up the controlled processing necessary to make sense of the dilemmas that need to be managed before people can even get at work." (Weick, 1995: 64)

With greater complexity goes greater search for and reliance on habitual, routine cues (Weick, 1988). Imposing routine as a target is a kind of organizational competence that works without the attention of top management. The control function connects to and challenges the organizational routines and generates alternative routines. Many aspects of performance, including decision-making, become substantially a matter of routine, thus releasing time and mental energy for investigating and understanding non-routine events (March and Simon,

1958). Routines are organizational actions, stored as accumulated lessons of experience that can be transferred to appropriate situations to decrease efforts and costs spent on decision-making and repetitive situations (Levitt and March, 1988; Cohen and Bacdayan, 1996).

Since the work of Cyert and March (1963), organization theory has viewed routines as fundamental building blocks as discussed in Chapter 3 on organizational routines. Complex sets of interlocking behaviors are 'held in place' through agreements and expectations (Feldman, 1989) and are characterized as memory, truce, and target (Nelson and Winter, 1982). It is difficult to replace platforms for replication of a routine because they are connected to structures that underlie the routine's performance and are established by the shared experience of the past (Nelson and Winter, 1982). Routines are also accomplished with the active cooperation of those involved in the performance (Winter, 1996). As routines adapt to experience in response to feedback about outcomes, there is a need to understand the forces that maintain them and create future paths (Levitt and March, 1988; Cohen and Bacdayan, 1996). Routines being the site of organizational learning (Stinchcombe, 1990) will be further described in Chapter 6.

Organizational routines provide an efficient structure for collective action. By ignoring the controlling power of routines, people falsely create illusions about the human contributions to organizational control: "People who see themselves as primary causal agents in the control process probably do not perceive the dynamic self-organizing properties that characterize ongoing structures." (Dunbar, 1981: 107)

What if a necessary routine fails to function smoothly? The socializing forms of accountability do much to secure the 'routine interdependence of action' within organizations which is essential to the operation of 'hierarchical forms of accountability' (Roberts, 1991). To detect failures, the process must be monitored and controlled. Especially control lapses are very serious threats to the complex routines of coordination that offer mechanisms for control. However, flows and loops created by the routines continue to exercise their controlling effects, pushing organizations directions, because the performance of being in control does not solely rest on routines (Munro, 1999).

> When the same people show up day after day at the same time and place, their activities are likely to become more mutually defined, more mutually dependent, more mutually predictable, and more subject to common understanding encoded into common language. (Weick, 1995: 74)

"Routines reduce environmental equivocality to manageable proportions … by bracketing out certain cues from consideration" (Dent, 1990: 17), which, at the same time, makes the organization more insensitive to change with consequences for outsourcing to be discussed in the next Section 5.5.

5.5 Control in Outsourcing

The controlling power of routines absorbs uncertainty[24] and shapes predictability as part of the information flows spanning the boundary. The control perspective considers the reciprocal and mutually supportive roles of the organization and its environment (Cooper *et al.*, 1989): "… produce means to combine materials and forces within our reach" (Schumpeter, 1934: 65 in Nahapiet and Ghoshal, 1998). Control of transactions gives the opportunity to access critical information and thus power to define and monitor interpretation of the organizational reality (Morgan, 1986/2006).

Traditional management control systems are held too inflexible for lateral relations that involve economic transactions of importance in outsourcing. Four structures of lateral relations in form of economic, institutional, social, and technical are essential to cope with changes characteristic of lateral relations (Van der Meer-Kooistra and Scapens, 2008). Co-operation between independent parties based on different motives and interests must allow individual capabilities and knowledge to be exploited for the mutual benefit of all the parties. Social knowledge, as the value system and behavioral pattern of a counterpart, recognizes an economic actor's ability to understand and predict, but not always necessary for sharing 'frames of reference' (Tolbert, 1988 in Sohn, 1994). Even when managers know less about their environments than they believe, activities are preferable, because they provide experience and develop flexibility through knowledge. Activity is driven by routines and organizations enact the environment while routine functioning and apply routine responses to this enacted environment (March, 1981). Even a large and highly mechanized plant keeps going largely because of "… an environment upon which it could draw for all

[24] *Uncertainty* in the sense of events not definitely known or decided and differing from risk: "The distinction between them is roughly that risk refers to situations where the perceived likelihoods of events of interest can be represented by probabilities, whereas uncertainty refers to situations where the information available to the decision-maker is too imprecise to be summarized by a probability measure." (Epstein, 1999: 579)

sorts of unexpected need" (Hayek, 1945: 524) and is able to proceed untrammeled by considering differentials in profitability.

Environmental challenges that could result in outsourcing and insourcing break down conventional boundaries both within and between organizations (Elharidy *et al.*, 2013). Different ways of organizing are 'a matter of reframing' (Hedberg *et al.*, 1994: 2). The control perspective shows "… the way the enterprise's relations with its environment are maintained" (Puxty and Chua, 1989: 137). Control of outsourcing must analyze the reciprocal and mutually supportive roles of the organization and its environments. However, "… intervening organizational and environmental variables make the measurement of performance relationships extremely difficult." (Simons, 1994: 184) Furthermore, control is not only a matter of how to govern the exchange; it is a control decision whether the exchange is to take place at all (Sohn, 1994). Samuelson (1994) suggests that uncertainty, related to future change faced by the organization, is the basic cause of demand for control in organizations.

Management control is concerned with how management can get the organization to respond to environmental disturbances (Cooper *et al.*, 1989). Internal and external environmental changes affect management and require flexibility[25], a wider focus, more adaptation, and, above all, a willingness to learn, which will be further discussed in Chapter 6.

Most changes in organizations do not result from extraordinary organizational processes and forces, but from relatively stable routine processes that relate organizations to their environment (March, 1981). Adapting to changes requires a different emphasis but also a different time framing. Change is dependent on new use of information, which often means that new information must be acquired from the outside world. The new sourcing relation is less familiar; it seldom fits, and brings both disruption and uncertainty (Macdonald, 1995). A sourcing relation, unlike a single event, develops over time and envelops different activities. Unless the effect of such changes is understood and assessed, organizational control systems are likely to be characterized by uncertainty, double binds, control illusions, doubts, and frustrations (Dunbar, 1981), because changes in routines are assumed to have effects on information, behavior, and resource flows, as discussed in Chapter 3.

[25] On flexibility in the management accounting context, see, e.g. Abernethy and Lillis (1995), Miller and O'Leary (1997), and Mouritsen (1999)

Change entails the doing of something different. Changes in the scope of supplies, alters a company's control boundaries. To cope with uncertainty deriving from external sources, the organization tries to achieve predictability and control through regulation of transactions at the boundaries. It could also try to move its boundaries to "incorporate unreliable units" (Thompson, 1967: 159). Controllers, evaluating managerial and organizational performance, are claimed to identify and link processes across operations and develop performance measurement systems that assist management in organizations that undergo change (Kaplan and Norton, 1992, 1993, 1996a, 1996b; Horngren *et al.*, 1999). This is in line with the conventional approach to management control, seen as "… the ways in which management can change the organization (e.g. its technology, personnel, information, behavior) to respond to exogenous and uncontrollable environmental disturbances." (Cooper *et al.*, 1989: 247)

Ongoing external changes demonstrate to become interlinked with organizational circumstances that connect to management accounting change (Miller and O'Leary, 1993; Vaivio, 1999). Accounting information absorbs uncertainty, shapes expectations, and creates visibility, being part of the information flows spanning the boundary (Simons, 1994; Ezzamel *et al.*, 1997; Prahalad and Ramaswamy, 2000). The controller and the accounting system used to capture and select what is produced as knowledge in the patterning of organizational reality and rationality (Weick, 1979; Lowe, 2001). Various choices are considered, and control is related to both authority and internal/external relationships including outsourcing, strategic alliances, networks, and virtual organizations (Ferreira and Otley, 2009). In the control perspective, structures and boundaries are linked to the organizational routines of the firm. Boundaries demarcate. As Cooper (1986) noted, organizing is synonymous with distinguishing that which belongs from that which is outside. To be part of a firm is to be subject to that organization's system of accountability (Roberts and Scapens, 1985). Organizations try to achieve predictability and accountability through regulation and control at their boundaries.

Uncertainty emanating from external sources alters a company's control boundaries. Boundaries are of interest for the analysis because they mark the organizations' span of control (Pfeffer and Salancik, 1978) and differentiate between different points of view. Organizational domain has been defined by "… technology included, population served, and services rendered" (Thompson, 1967: 40). This definition could be applied from both a control perspective and from the earlier discussed knowledge perspective in Chapter 4.

There are four features of interest to a long-term outsourcing relationship (Van der Meer-Kooistra and Scapens, 2008: 369): Exchange of knowledge (1), co-operation in competition (2), flexibility in standardized systems (3), and leadership change (4). To create a 'win-win' situation in the sourcing relation, exchanges of knowledge were provided for in contractual agreement. To secure co-operation is important for the exchange of knowledge; at the same time maintain a competitive relationship is important for efficiency. The need for changes in leadership was influenced by changes in confidence, trust and commitment during the development of the relationship (Langfield-Smith and Smith, 2003). This has been noted in the analysis of Adecco's relation to SunLibrary in Chapter 1. In Adecco the efficiency of day-to-day operations of the SunLibrary required standardization but also access to proprietary and confidential information prevented by Sun Microsystem (Hill, 1998: 48). The boundaries between SunLibrary and Sun Microsystem as well as Adecco had problems in shaping the domain of control.

The concept of 'organizational boundary' is defined through processes of inclusion and exclusion that mark the limits of the organization and maintain the organization as a unified entity (Llewellyn, 1994). Boundaries can be defined in several different spheres of organizational activities: physical, productive, financial, psychological, legal, or temporal (Perlow, 1998). Llewellyn (1994) further discusses how financial reporting, through quantification of assets and liabilities, manages the boundary as a threshold between the organization and its environment, whereas management accounting functions as the binding structure that preserves the organizational unity both in time and space (Cooper, 1990; Kjellström, 2017).

"The boundary is where the discretion of that organization to control an activity is less than the discretion of another organization or individual to control that activity." (Pfeffer and Salancik, 1978: 32) Management exerts control over what happens within the organization but has almost no control over what happens outside the organization. Barriers to resource mobility may be of both economic and social origin (Oliver, 1997). The normal response by senior management is to increase security by property rights (Badaracco, 1991 in Macdonald, 1995: 562). This is also shown in the SunLibrary case, where the computer company Sun Microsystems finally convened the eight outsourced workers into full-time, regular staff (Hill, 1998: 46).

From the open system perspective, the organizational boundary is permeable, allowing input output flows of exchange (Llewellyn, 1994) and "… its activities, and its outcomes are strongly influenced by environmental factors" (Scott, 1987:

23). However, Thompson (1967) found that firms tried to isolate their technical cores from environmental influences by establishing boundary spanning to reduce environmental uncertainties and isolate knowledge based on core competences and routines. Boundary spanning units are created by linking uncertainty reducing activities within the organization to activities in the environment. Controlling transactions give opportunity to access critical information and thus power to define and monitor interpretation of the organizational reality (Morgan, 1986/2006). Regulation of transactions at the boundaries of the organization helps create reliable units as part of that organization's accountability. Several boundaries are exposed, challenged, and extended in an outsourcing situation, which could bring understanding to the binding structures represented by organizational routines. The crucial problem for boundary spanning units is to adjust, not coordinate, and to level environmental variables that are not controlled by the organization. Whether the same would be found when analyzing organizational routines in an outsourcing situation will be discussed later in Chapter 8.

Boundary management is seen as an essential organizational activity, where the identities of the organization and its environment are established and maintained (Cooper, 1986). Boundary management is usually accomplished by people in leadership positions (Llewellyn, 1994). The role of middle management and key employees as boundary spanners is important because as gatekeepers they get external information preeminent for the link between internal and external systems, where specific local information, particularly 'tacit knowing' (Polanyi, 1967) through knowledge sharing in the decision-making processes must be built on trust (Macdonald, 1995; Davenport and Prusak, 1998).

The traditional management control perspective that provides predetermined and highly structured information seems inappropriate for governing lateral relations. Instead, new forms of control practice[26] are needed when activities span the boundaries of the firm; concepts like flexibility, interdependence, learning, and organic structures have been used. In lateral relationships, different backgrounds, knowledge and experience need to be shared between the parties (Van der Meer-Kooistra and Scapens, 2008). To give greater emphasis to the external environment the definition of manager responsibilities (Horngren *et al.*, 1999: 17) must be reconstructed.

[26] Diagnostic and interactive roles (Simons, 1995) or coercive and enabling roles (Ahrens and Chapman, 2002)

> A routine may involve extensive direct interactions with the organization's environment and the making of numerous 'choices' that are contingent both upon the state of the environment and the state of the organization itself, but these choices involve no process of deliberation by top management. (Nelson and Winter, 1982: 125)

Various types of rights and control associated with resources are shared between firms. It will have consequences in the sourcing situation (Kraaijenbrink *et al.*, 2010). Social knowledge as a control mechanism for economic exchanges (Tolbert, 1988 in Sohn, 1994) is a valuable supplementary control mechanism with which equity positions may be reduced, because ownership positions are important means of control. A transaction cost economics approach to the adoption and design of management control structures is static of nature because of its lack of attention to gradual developments that occur through interaction of actors (Vosselman and Van der Meer-Kooistra, 2006). This may be the case when an outsourcer like Sun still adopts a contract even if a trust pattern has been developed with Adecco through different earlier experiences.

There are also means of knowledge and control to consider such as superior access to raw materials, distribution channels, managerial and contractual arrangements, and diversification. The impact of outsourcing will be further emphasized and connected to boundary discussions. Perspective taking is never a one-to-one mapping of meanings, so through the construction of boundary objects, different perspectives can be brought into dialogue. In the absence of boundary objects, the possibility of perspective taking and the opportunity for knowledge work in the firm is limited (Boland and Tenkasi, 1995), as discussed in Chapter 4 and to be further elaborated in Chapter 8.

Controlling the input output flows of exchange gives access to knowledge. Flows created by the routines continue to exercise their controlling effects, pushing the organization in directions important for learning and change. These discussions will serve as a starting point to intertwine and appreciate the interrelationship between knowledge, control, and learning to be further developed in Chapter 7.

5.6 Conclusions on the Aspect of Control

To conclude, the aspect of control, looked upon through the perspective of management control, has shown how management exerts control over processes

in the organization that determine or intentionally affect what is accomplished. The hierarchical, functional, and divisional patterns are reproduced though the operation of systems of accountability, where the subordinate accounts to the superior (Roberts and Scapens, 1985).

The interaction between the formal and the informal controls, both horizontally and vertically, is seen as a valuable alternative to the bureaucratic control systems (Ouchi, 1980; Tolbert, 1988 in Sohn, 1994; Tuomela, 2005). Social controls become preferable when behavior and outcomes can be measured precisely, and rational controls lose their efficacy (Ouchi, 1979: 845). To balance between the technical and behavioral dimensions of control (Macintosh, 1994), the control frameworks of both Simons (1995) and Ferreira and Otley (2009) have emphasized how important social controls like the belief and boundary systems are in communicating core-values to empower the employees and stimulate learning (Nixon and Burns, 2005). However, informal control processes such as group norms, socialization, and culture are not explicitly elaborated in this study, neither destructive traits like uncertainty, conflicts, or fear of failure and anxiety (Weick, 1979).

The control aspect was considered an important lever of performance of interest for the structure, the accountability, the coordination, and the communication of knowledge in the firm. The control issues at the strategic, management, and operational levels are complex. Control could be seen as the knowledge relations that render reflexivity, boundary objects, and perspective taking possible.

Outside of the conventional management control framework, performance management and measurements have developed as an independent momentum (Kaplan and Norton, 2004). Even if the concept of control is of a one-sided nature in management control relations (Van der Meer-Kooistra and Scapens, 2008), the term control covers also lateral relations. In knowledge-intensive firms lateral rather than hierarchical organizational control systems have developed. Also, the boundary of the organization has been challenged by new business models that make extensive use of alliances, clusters and partnerships, outsourcing and 'off-shoring'. Here, the control systems are poor channels for new information because the boundary of the organization is a barrier (Badaracco, 1991). It emphasizes external conditions, which will have consequences for the further discussions in Chapter 7 on control and predictability.

It has been shown how firms that outsource must renounce control over knowledge of how to perform the outsourced function, or activity. Control lapses cause memory lapses (Nelson and Winter, 1982) that have effect on control of

work routines in the organization. Outsourced routines are removed from the accountability of the organization (Elharidy *et al.*, 2013).

The traditional management control perspective would be too inflexible for the types of lateral relations and would constrain the autonomy of the parties and thereby severely inhibit the creation of trust (Das and Teng, 2001; Van der Meer-Kooistra and Scapens, 2008). Trust between parties and new centers of accountability, both formal and informal, at lower levels of the organization, crisscross different boundaries and play a major role in performance evaluation of individuals and groups, as well as departments, divisions and the entire organization (Ferreira and Otley, 2009). Lateral relations can enable organizations to cope with uncertainty by exploiting specific local information, particularly of the tacit dimension (Polanyi, 1966), through information and knowledge sharing. Control over information for defining responsibilities between the parties involved in outsourcing or technical requirements used to stimulate coordination between autonomous, independent parties, highly differs from the traditional hierarchical top-down control (Van der Meer-Kooistra and Scapens, 2008). The control problem is related to exchange and the fact that the inputs are heterogeneous. As material, human energy, and information enter and leave the organization, responsible management demands that formal agreement and transactions should be monitored and accounted for (Macdonald, 1995). Controls of the interactive processes are important for "… capitalizing on the knowledge of others" (Ford *et al.*, 1998: 240) and "… to learn from each other and to master the shared assumptions, the complex rules, the normative codes, the underlying institutional logic … to control the construction of the everyday reality." (Jackall, 1988: 18)

The organizational routines survive the individual actor and uphold both control and knowledge, representing successful experiences and approximating future learning (Nelson and Winter, 1982). However, the employees are not a taken for granted resource that are hired for what they already know; they are to be considered for what they will be able to learn, as will be further considered in Chapter 6 on organizational learning.

6 An Organizational Learning Perspective

This perspective presupposes a routine-based, history-dependent, and target oriented view according to the behavioral studies of the organization, indicating that organizations learn by encoding history into routines that guide behavior and survive the individual actor. Organizational learning involves both the discarding of obsolete knowledge and the acquiring of new concepts and structures. To understand the consequences of outsourcing and insourcing, it is important to look at how organizational routines might change due to acquired new knowledge, experiences in communities of practice, or modification due to evaluation of outcome.

6.1 The Concept of Learning

Learning is seen as the alteration of behavior as a result of experience. Cognitive, emotional, and environmental influences, as well as prior experience, play a part in how understanding, or a world view, is acquired or changed, as well as how knowledge and skills are retained. Learning theories are conceptual frameworks describing how information is absorbed, processed, and retained during learning. It is an ongoing pattern of attitudes and actions by individuals and groups, employed in dealing with novel and messy events in the practicing of communities, teams, and personal networks (Behlol and Dad, 2010). Learning theory distinguishes between learning as addition, indicating starting or adding something new, and learning as reconstruction indicating change or transformation (Illeris, 2015).

Learning is different from acquiring pieces of knowledge because learning involves the development of shared experiences in communities of practice; it stresses shared practice within which learning takes place (Lave and Wenger, 1991; Wenger, 1998; Lam, 2014). However, communities of practice may have limited

capacity to create new "… knowledge because of the strong convergence of competence and experience inside the community." (Lam, 2014: 95). Communities of practice are "… groups of people informally bound together by shared expertise and passion for a joint enterprise" (Wenger and Snyder, 2000: 139).

The term learning is comprehensive, covering a wide range of activities and modes of learning: Learning by trial and error (Thorndike 1874-1949), learning by conditioning (Pavlov, 1849-1936; Skinner, 1904-1990), learning by insight, i.e., by understanding or perception of the situation (Köhler, 1887-1967), and learning by imitation (Miller, 1909-2002; John Dollard, 1900-1980).

The learning processes are often interpersonal and "… very much a social, not a solitary, phenomenon …" (Simon, 1991: 115). Learning is to a large extent achieved within the social and collaborative processes. Learning does not rest with the individual but is a social process that is situated in a cultural and historical context dependent on the information known and present in the organizational context, which will be discussed below in Section 6.3. The difference between individual and organizational learning corresponds to the difference between knowledge memorized in the mind of the individual, and the memory housed in a project group or stored in documents or computer files. The individuals' learning activities are facilitated or inhibited by organizational learning (Argyris, 1977b).

The four learning processes intuition, interpreting, integrating and institutionalizing operate over different levels:

> … intuition occurs at the individual level and institutionalizing at the organizational level; however, interpreting bridges the individual and group levels, while integration links the group and organizational levels. (Crossan *et al.*, 1999: 525)

Learning is seen as situated within the 'interactive context', not in the nodes, but in the connection between nodes i.e., not in the individuals, but in the links between individuals (Fisher and White, 2000).

> What an individual learns in an organization is very much dependent on what is already known to (or believed by) other members of the organization and what kinds of information are present in the organizational environment. (Simon, 1991: 125)

Consequently, there is more to organizational learning than the cumulative result of the organizational members' learning.

6.2 Organizational Learning

Organizational learning has hitherto been viewed as 'bundles' of individual learning under the monitoring of top management. March's (1991) concept of organizational learning is based on a view, where the individuals are more or less unrelated competitors in the organization.

> But we must be careful not to adopt too strict a definition of organizational learning… All learning takes place inside individual human heads; an organization learns in only two ways: (a) by the learning of its members, or (b) by ingesting new members who have knowledge the organization didn't previously have. (Simon, 1991: 125)

Organizational learning refers to processes by which information is found, acquired, and used (Hedberg, 1981). Eneroth (1997) found that differences in defining organizational learning depends on if one sees learning as brought about by information or learning as based on insights or routines within the organization. Bontis (1999) also suggests that there exists a continual loop in which stocks and flows of knowledge constantly reinforce one another and provide output for the system. Organizational learning as such is a path-dependent process (Cohen and Levinthal, 1990), whereby investment in one time period often generates growth options in later time periods (Itami, 1987).

> Organizational learning is a reflective process, played out by members at all levels of the organization that involves the collection of information from both the external and internal environments. This information is filtered through a collective sense-making process, which results in shared interpretations that can be used to investigate actions resulting in enduring changes to the organization's behavior and theories-in-use. (Fisher and White, 2000: 245)

Organizational learning is the process through which the firm acquires information and knowledge for adequate understanding of the internal system and the external environment (Lind and Rhenman, 1989). The purpose of learning is to improve performance and to master the environment (Katona in

Hedberg, 1981: 5). There are several factors (Fiol and Lyles, 1985) influencing the probability to learn, such as corporate culture, strategies allowing flexibility and structures promoting innovativeness and environmental insights. In addition, environments affect learning and learning is facilitated when the environment gives opportunities for experimental learning to understand elements of the environment (Hedberg, 1981). Too much turbulence can prohibit learners from mapping the environment. Turbulent environments, where the elements are highly interconnected and under rapid change, demand more control capacity than organizations normally possess. Change does not necessarily imply learning. Even if "… some learning manifests as observable changes in worker behaviours and work routines. Other learning is not …" (Berta *et al.,* 2015: 142).

To further qualify organizational learning, it could be seen as enabling new opportunities to be identified and thereby defined as "… the process within the organization by which knowledge about action outcome relationships and the effect of the environment on these relationships is developed …" (Duncan and Weiss in Weick, 1991: 120).

Organizational learning becomes apparent when patterns of behaviour in the organization change and takes place when "… organizations increase their understanding of reality by observing the results of their acts" (Hedberg, 1981: 3), and if, through the processing of information, the range of their "… potential behaviors is changed" (Huber, 1996: 126).

The content of organizational learning is shaped by events themselves but also by the 'inherited knowledge' influenced by the founders and the founding (Huber, 1996) as well as by the framework within which the events are interpreted in the specific firm.

6.3 Learning in the Firm

Organizations are assumed able to build knowledge around the recurrent tasks that they perform (Cyert and March, 1963; Nelson and Winter, 1982). An organization learns when it changes through experiences in collective action. The learning organization as a system thinking concept was introduced to deal with prerequisites for personal learning within an organizational frame in order to transfer individual learning to an overall organizational level (Senge, 1992). Even if the learning organization collects and processes business information from both

external and internal organizational environments and accumulates, it as knowledge (Daft and Weick, 1984) the learning organization has been criticized for emphasizing internal aspects because "... 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." (Cohen and Levinthal, 1990: 128).

Capabilities of the firm may also improve through use i.e. learning by doing, which also indicates that they could deteriorate through disuse. The firm's absorptive capacity refers to the organization's ability to acquire, assimilate, and exploit knowledge. It is understood from the structures of communication between the external environment and the organization but also between the subunits and the expertise of the organization (Cohen and Levinthal, 1990: 132).[27] Organizations with a higher capacity to absorb knowledge have a higher propensity to utilize and circulate it.

However, there is no real collaboration in the learning organization (Senge, 1992) that tends to focus on the business leader as a facilitator and coach responsible for learning. The results of previous experiences and learning more or less dictate the objectives and strategies that the managers of the organization pursue (Cyert and March, 1963).

The term 'capabilities' emphasizes the key role of strategic management in adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment (Teece *et al.*, 1997: 515).

> ... it is largely a function of the firm's level of prior related knowledge. The discussion focuses 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 from that of its individual members, and the role of diversity of expertise within an organization. (Cohen and Levinthal, 1990: 128)

Knowing that it is important to pay attention to the role of different settings in learning and knowing that the specialists' capacity cultivates through multiple

[27] How firms are located in different institutional contexts differ according to Lam (2000) in their capability to mobilize learning capacity. Her 'societal' approach in industrial sociology in not discussed in this study.

contexts, it could be been questioned why experts are placed in central locations (Tyre and von Hippel, 1997).

It has also been questioned how the communities of practice should be managed to reach a balance between control and autonomy in supporting them to transfer existing knowledge or to explore new knowledge (Borzillo, 2017).

Argyris' definition of organizational learning (1977) as the process of 'detection and correction of errors', must be seen as paying attention also to the capacity that implicitly knows if and when the process is unable to detect and correct errors. Like the concept of control discussed in Section 5.1, mistakes are to be rectified and prevented from recurring.

Knowledge acquisition, information distribution, information interpretation, and organizational memory are integrally linked to organizational learning (Huber, 1996). However, attaining desired ends as a process of regulation and monitoring for the achievement of goals (Das and Teng, 2001) is not explicitly indicated.

It is assumed that the overwhelming amount of learning done in an organization that focuses on solving problems in the present and improve efficiency of existing routines or processes without examining the appropriateness of current learning behaviors, or questioning underlying program, is 'adaptive learning' or 'single loop learning'[28] (Argyris, 1977a; Berta *et al.,* 2015). "Most organizations, often without realizing it, create systems of learning that suppress double loop inquiry and make it very difficult for even well designed information system to be effective." (Argyris, 1977a: 114)

Trouble arises when the technology is ineffective and fundamental assumptions underlying the existing ways of doing work must be questioned (Orlikowski, 1991; Senge 1992). The increasing uncertainty of the environment requests an organization able to focus on 'double-loop learning'[29] (Argyris, 1977a; Argyris and Schön, 1978) or 'generative learning' that anticipates goals and processes, reacting to changes and complexity. 'Triple loop learning'[30] refers to reflective learning,

[28] *Single loop learning* "… will tend to fall within the confines of what is acceptable. This is called single-loop "… like a thermostat, individuals learn only about those subjects within the confines of their program. They will find out how well they are hitting their goal (maintaining a particular temperature)." (Argyris, 1976: 32)

[29] *Double loop learning* "… will confront the validity of the goal or the values implicit in the situation" …"confronts the basic assumptions behind ideas or present views and that publicly tests hypotheses." (Argyris 1976: 32, 34)

[30] T*riple-loop learning* is a conceptualization that has little theoretical rooting according to critics (Tosey *et al*., 2012); thus not used here.

i.e., learning to improve the learning processes (Berta *el al.*, 2015). However, single, double, or triple loop as organizational learning is hardly supported by any empirical works (Nonaka and Takeuchi, 1995; Huber, 1996).

Even if organizational learning is seen as an adaptive change process, influenced by past experience and focused on developing or modifying routines to be supported by organizational members, organizational learning did not really identify the importance of teams and networks (Nonaka and Takeuchi, 1995). Borgatti and Cross (2003) suggest that a social network perspective enriches the understanding of collective learning in organizations in transforming individual information into team knowledge. Learning could be seen as a process of becoming a member of a community of practice, through legitimate peripheral participation, i.e., apprenticeship (Kolb and Kolb, 2005: 200). A team and a community-of-practice are different concepts. There is this distinction; a community of practice is a group of specialists that learn together, while a team is defined by the joint task they must accomplish (Wenger and Snyder, 2000; Pandey and Dutta, 2013; Farnswoth *et al.*, 2016). Communities of practice are emergent, they exist within a business unit or stretch across divisional boundaries (Wenger and Snyder, 2000).

The routine-based approach of this study that sees the routinized business operations and the control systems of the firm as able to generate learning through the process of repetition and experimentation (Teece et al., 1997; Napiet and Ghoshal, 1998) will be further explained in the next Section 6.4. Organizational learning is thus discussed as a routine-based activity that is embedded and remembered in particular firm settings. The individual organization learns by changing its actual routines or the repertoire of organizational routines (Larsson *et al.*, 1998).

Organizational learning is, however, not equated to simple transfer of knowledge or best practice. To determine the magnitude of organizational learning it must be conceptualized as both the achievement of knowledge and the impact that the achieved knowledge has on the reinforcement of routines or change in routines (Saka-Helmhout, 2010). The knowledge-based views (Kogut and Zander, 1993; Hall, 1993; Grant, 1996, 1997; Spender, 1996, 1998; Sveiby, 1997) see firms' specific resources such as routines, capabilities, and competencies as central. The firm's performance becomes a matter of routine in order to release time and energy for investigation of novel events.

6.4 Organizational Learning in Routines

Organizations learn by encoding inferences from history into organizational routines, which, in guiding behavior, encode knowledge and capabilities to improve over time (Cyert and March, 1963; Nelson and Winter, 1982). It means that organizational learning is viewed as "… routine-based, history-dependent, and target-oriented …" (Levitt and March, 1996: 516). Routines are the key mechanism in organizational learning; the stabilizing structure of the organizational routines is emphasized (Feldman and Pentland, 2003).

However, routines not only manage regularities but also deviations. Information about uncertainties is therefore seen as switching activation among routines. How interactions between the ostensive and the performative aspects of the routine create changes, where organizational learning could be the outcome has already been discussed in Section 3.3. Organizational learning suggests change but there is a suspicion that it is contradicted and opposed by the control system of the firm that aims at stability not at change. Learning may therefore not directly result in observable changes in behavior, but "… more organizational learning occurred when more and more varied interpretations have been developed, because such development changes the range of the organization's potential behaviors." (Huber, 1996: 126)

Whether the process by which firms acquire, assimilate, transform and exploit knowledge to produce a dynamic organizational capability is labelled 'learning' or 'absorption'. The creation of dynamic capabilities depends on underlying routines that change. If the routines display inertia, absorptive capacity will be low, learning will be slow, and the capabilities of the organizational may not be particularly dynamic.

Organizational routines often emerge through gradual multi-actor learning, which could introduce the team to be highlighted as a potential lever to enhance organizational performance (Cohen and Bacdayan, 1996; Huber, 1996; Levitt and March, 1996). Knowledge, gained from significant organizational experiences in work processes or product architecture, is integrated into the organization's operations (Cross and Baird, 2000). As already discussed in Section 3.1 a routine is a repository of organizational memory that is upheld and transmitted by standard operating procedures as well as customs, symbols, myths, cultures, and professional groups. The metaphor of a stage is used to illustrate the organizational memory; a stage where the tradition of plays and standards remain as time passes: "The actors act, but they are directed. They are assigned roles. They are assigned

scripts, and they become socialized into a theatre's norms, beliefs, and behaviors." (Hedberg, 1981: 6)

Members come and go, leaderships change, and learning requires both change and stability i.e., organizations' have memories that "… preserve certain behavior, mental maps, norms, and value over time." (Hedberg, 1981: 6)

Pressure from the environment and performance of specific actions executed by specific people influence the performative aspect of the organizational routine. Even if organizational routines survive considerable turnover in individual actors, the initial incumbent matters as it comes to learning new routines, new to the organization (Miner, 1996; Miner and Mezias, 1996). Experience provides the historical perspective in form of accumulated knowledge from which to view new situations from both the external and internal organizational environments (Daft and Weick, 1984; Levitt and March, 1996; Davenport and Prusak, 1998; Fisher and White, 2000).

> Organizational learning is a social process. Members of an organization interact to construct meaning and knowledge about action-outcome relationships and about effects of the organizational context (learning environment) on those relationships. (Berta *et al.*, 2015: 142)

Knowledge and skills are built by employees and routines working together while getting exposed to others' knowledge in the light of their tacit knowing (Mortensen and Beyene, 2009). The organization's memory (Cross and Baird, 2000: 70) is thus embedded in the minds of its employees and in the relationships from accomplishing work in groups and projects teams. The group-level is crucial in routine change because it fosters learning and the articulation of knowledge (Dittrich *et al.*, 2016). It strengthens learning by embedding knowledge that has been cultivated in work processes and support systems and databases as well as in products and services evolved over time. The organization is the promoter of order and durability as well as the provider of the context that link individual memories together. Therefore, to view organizational memory as reducible to an individual member's memory would be to

> … overlook, or undervalue, the linking of those individual memories by shared experiences in the past, experiences that have established the extremely detailed and specific communication system that underlies routine performance. (Nelson and Winter, 1982: 105)

Current organizational routines represent the organization's memory of what appeared to be successful in the past (Cyert and March, 1963; Nelson and Winter, 1982). An organization remembers by keeping "… equipment, structures, and work environment in some degree of order and repair." (Nelson and Winter, 1982: 105) Efforts have thus been made to build technical infrastructures that support knowledge capture and dissemination. The behavioral patterns of the individual firm are characterized by 'continuity'. The concept of 'routine operation' implies that neither equipment nor structures of the organization undergo radical and discontinuous change. Employees continue their 'repertoire' of routines. It indicates that they know what and when to perform and are being able to discern the implications in the immediate environment in "… changes that others, by merely doing their jobs, have produced." (Nelson and Winter, 1982: 102) The organization is thus seen as having no trouble conforming to routines. Therefore, firms may be expected to behave in the future according to the routines they have employed in the past, and in ways that resemble the behavior that simply followed the routines of the past (Nelson and Winter, 1982).

The knowledge of the organizational routines marks the point that learning has reached so far (Winter, 1996). The dilemma here is that the organization is "… expected to encounter difficulty in departing from its prevailing routines …" (Nelson and Winter, 1982: 112). No further learning occurs because of complacency, i.e., the uncritical satisfaction with the firm's achievements, without pressure to develop. As assumed in the hypothesis, control processes also tend work against learning while they "… resist mutations, even ones that present themselves as desirable innovations." (Nelson and Winter, 1982: 116) It is also unlikely that a firm's current portfolio of invisible assets matches the changing environment (Itami, 1987). Environmental changes create uncertainty, while the organization relies on previous successful behavior and strongly resists restructuring because the organization's environmental maps tend to be rigid (Weick, 1969).

However, according to the evolutionary approach, the firm is operating routines in both productive and developing activities (Nelson and Winter, 1982; Rathe and Witt, 2001). Reframing seems to require restructuring of the definitions that refer to the firm's worldview, or conditions, necessary for changes.

> The events, procedures, technical systems, and daily routines embedded in a given setting provide learnings with both specific clues as to the nature of the problem (or solution), and tools or resources to aid investigation. (Tyre and Von Hippel, 1997: 73)

Settings for learning is of significance. Employees learn how to function in a community and how to to acquire the viewpoint and the language of the community (Brown and Duguid, 1991; Lave and Wenger, 1991). The concept of community of practice (Wenger, 2000) indicates a functioning team, a group of professional individuals, together performing a set of organizational tasks. These collaborative processes are necessary to be able to understand complex organizational problems because different settings provide different opportunities for learning that

> … are more fluid and interpenetrative than bounded, often crossing the restrictive boundaries of the organization to incorporate people from outside. (Brown and Duguid, 1991: 49)

> … sources of innovation can lie outside an organization among its customers and suppliers. Emergent communities of the sort we have outlined that span the boundaries of an organization would then seem a likely conduit of external and innovative views into an organization. (Brown and Duguid, 1991: 54)

The state of knowledge in the organizational context is subject to change as a consequence of different proceedings like (Nelson and Winter, 1982: 64): deliberate choice or unchosen and unwelcome processes, as well as learning by doing jobs more efficiently or drawing on what others already know. Interorganizational connections such as outsourcing provide perspectives on the transfer of knowledge embedded in practices or routines that indicate changes where organizational learning might occur (Argote and Miron-Spector, 2011).

In a recent presentation on temporary, cross-boundary projects (Baldessarelli, 2018: 1) there is pointed out that organizational outcomes depends on multiple interrelated routines through the joint efforts of actors that come from different organizations and communities. It is an interesting though different analysis of eight design projects on interrelated routines across multiple boundaries based on a field study at a design agency explicitly recognizes the role of emotions expressed toward artifacts.

However, in this study it is not possible to consider an interaction effect in interorganizational relationships, because the problematics in knowledge, control, and learning is examined from just one of the two parties, the outsourcing company. In this study no emphasis is put on the "… different types of learning processes that firms undergo through the accumulation of experience in the management of strategic alliances" or different types of 'cooperative ventures'

(Larsson *et al.*, 1998; Zollo *et al.*, 2002: 702). Moreover, there is no attention put on how "… interorganizational learning among the interacting organizations are determined by the combination of their individual learning strategies." (Larsson *et al.*, 1999: 125)

6.5 Learning in the Sourcing Situation

When the firm adapts to expectations and feedback on outcome, changes manifest themselves as adjustments of organizational routines to relate to the experiences of change (Cyert and March, 1963; Nelson and Winter, 1982). The evolutionary approach focuses on the firm as a 'repository of productive knowledge' that transfers and recombine organizational capabilities and firm specific competencies (Nooteboom, 1992; Teece *et al.*, 1994; Montgomery, 1994; Langlois and Robertson, 1995; Winter, 1998; Witt, 1998).

The rational of the internal organization is to stimulate ongoing learning processes, where the firm is assumed to have superior capabilities relative to market in developing "… knowledge about how to coordinate complex production systems." (Foss and Foss, 2000: 17) Following Schumpeter (in Zander and Kogut, 1995), new knowledge can be created either through an incremental change that develops existing knowledge or through a more radical change i.e., innovation. New resources, including knowledge, are created through two generic processes: combination and exchange. Both types of knowledge creation involve making new combinations either by combining elements previously unconnected, or by developing novel ways of combining elements previously associated. The firm accounts for processes of specialization and internal division of labor acquiring, combining, utilizing and maintaining technological and commercial knowledge. Knowledge already available within the organization facilitates what the organization is already doing but is not likely to make a major contribution to changes.

> For the organization to respond routinely with a wide variety of specialized routine performances, each "customized" for a particular configuration of the environment, members must be able to retain in repertoire the specialized individual routines involved, and to recall the meaning of a set of messages sufficiently rich to differentiate all the required performances from one another. (Nelson and Winter, 1982: 106)

Changes, in the inner and outer environments, challenge the "organisation's cognitive structure" (Hedberg, 1981: 15). The process involves both learning new structures and discarding obsolete, misleading structures, including the 'managerial frames' – the corporate equivalent of genetic coding – that limit management's perception to a particular slice of reality.

> This genetic coding also encompasses beliefs, values, and norms about how best to motivate people; the right balance of internal corporation and competition; the relative ranking of shareholder, customer, and employee interests; and what behaviors to encourage and discourage … (Hamel and Prahalad, 1994: 49).

The corresponding concept to genetic coding is 'heuristics'. A heuristic is "… any principle or device that contributes to the reduction in the average search of solution …" (Nelson and Winter, 1982: 132). In a change situation a set of heuristics will be brought along including the pattern of previous problem-solving ways built into the organizational routines. Bontis (1999) raises doubts about the firm's capacity to leverage the routines. There is a thin line between the desire to institutionalize learning and the need to prevent the managerial frames from becoming rigid and inflexible.

The ability of a firm to recognize the value of new, external information is critical to its innovative capabilities (Cohen and Levinthal, 1990; Larsson *et al.*, 1998). Even if change is dependent on new information that must be acquired from the outside world, it is simply not enough to fit new information into existing knowledge.

> … spatial reach (range) that enables access to new knowledge should not be conflated with the social depth (cohesion) needed for its effective transfer and exploitation …. The integration of global spatial reach with local social depth is what is needed for learning and innovation in a globalizing knowledge economy. (Lam, 2014: 97)

The external is commonly regarded as a catalyst, stirring into action a process, which is essentially internal to the organization, affecting both the buyer and the seller in the sourcing relationships. The buyer must bring home new information to be mixed with resident information in order to shape a novel pattern to be used. The 'absorptive capacity' is a function of the firm's level of prior related knowledge (Cohen and Levinthal, 1990: 132). The installation of resources is connected into sets of complementary technology, equipment, and knowledge with its own internal logic that develops over time (Nelson and Winter, 1982).

Being embedded in the complexity and variation of the environment, the future development and knowledge of an investment has to be continuously updated beyond the particular application. The growth of the firm, as explained by Penrose, could therefore be seen as "… a theory of resource learning." (Foss, 1997: 12)

> Thus, as Penrose (1959) stressed, the services (i.e., its attributes) of an asset – say, a machine – are not given to the operating personnel in the firm that acquires the machine but has to be discovered by them in a learning by doing manner. (Foss and Foss, 2000: 16)

Learning processes provide integration of acquired knowledge into organizational routines, which makes employees focus on certain information and knowledge and not on others. Consequently, growth of knowledge should not be thought of as the result of random learning but as correlated to developed procedures, competences, and techniques relevant to the ends or objectives discussed (Barnes, 1977). An organization's absorptive capacity is a product of both the "character and distribution of expertise within the organization" (Cohen and Levinthal 1990: 132). Absorptive capacity accounts for both existing knowledge and relations with central individuals or coalitions identified as 'boundary objects' whose knowledge is likely to be influential in facilitating information exchange in light of new problems (Borgatti and Cross, 2003).

As will be further discussed in Chapter 8 on Sourcing, a positive interaction may reduce access barriers and lead to interactions that increase knowledge of that source's expertise. However, attempts to change routines could also provoke a conflict that is destructive to both the participants of the sourcing relation because prevailing routines define a truce. In the discussion of organizational changes, the simplistic assumption of the routinized behavior of the firm is made that imitation of routines could be perfectly accomplished, whereby capacity expansion is seen as a faultless replication of routine, and contraction is a simple scaling down of the same routinized pattern of operation (Nelson and Winter, 1982: 135).

6.6 Conclusions on the Aspect of Learning

In order to conclude, the aspect of learning – looked upon through the perspective of organizational learning – has shown that "… organizations are poor at improvising coordinated responses to novel situations." (Nelson and Winter,

1982: 125) On the other hand, the survival and growth of firms strongly depend on the successful generation and absorption of new knowledge (Rathe and Witt, 2001). Significant for the organizational learning perspective is that new knowledge is not reducible to any single installation of resource. In the basic model of organizational evolution, organizational action occurs through the repetition of standard operating procedures or routines, whereby valuable routines are retained from what appeared to be successful in the past, whereas less valuable routines expire (Cyert and March, 1963; Nelson and Winter, 1982; Miner and Mezias, 1996). Organizations thus learn by observing the results of their acts, encoding their experiences into organizational routines to guide future behavior. According to the adaptive, incremental learning approach, relatively small events can have an impact long after the period in which they occurred (Levitt and March, 1996). However, to the extent that success confirms the firm's strategy, managers may come to believe that 'doing more of the same' is the surest way to prolong success (Hamel and Prahalad, 1994: 55).

Does new knowledge emerge from here? Learning must be considered a social phenomenon, even if organizational learning is studied as a logistical process. Firms are social communities, which use their relational structures and shared coding schemes to reproduce capabilities and enhance the transfer and communication of new skills (Zander and Kogut, 1995). The interaction between learning and knowledge is conceptualized as 'organizational memory', assumed to reside in a system of coordination that combines relations, tasks and past track record of success into productive performance. The memory is held in the firm's files, records, procedures, and policies, as well as in its culture, 'theories-in-use' (Argyris and Schön, 1996) and 'communities-of-practice' (Brown and Duguid, 1991; Lave and Wenger, 1991), which makes the group-level a crucial factor (Dittrich *et al.*, 2016). Knowing that the participation of a knower is required to handle tacit knowing and skills according to Polanyi (1967) and that there are differences to be recognized between knowledge memorized in the mind of the individual, and the memory housed in a project group, or the memory stored in documents or computer files. Considering routine change, the collective role and reflection is of importance both for the performative and the ostensive aspect of the routine (Dittrich *et al.*, 2016).

The sources of learning are connected also to the structures of communication between the organization and the external environment. Information in an organizational environment could thereby not be ignored even if a coherent view of the whole is difficult to share and needs the emphasis of technical infrastructures that support knowledge capture and dissemination. Innovations

cannot be assumed to be driven by individual geniuses that are supposed to have surfaced to top management positions. Innovations that involve change in routines or consists of new combinations of existing routines may be interpreted as organizational change (Loasby, 2000). Threats that escape the control system are seen as the worst because keeping the routines is understood as keeping things predictable and under control. To maintain adaptability, organizations need to operate themselves as 'experimenting' or 'self-designing' organizations, e.g. should maintain themselves in a state of frequent, nearly-continuous change in structures, processes, domains, goals, required for the survival in fast changing, unpredictable environments (Hedberg *et al.*, 1976; Starbuck, 1983, 1996).

Substantial changes in the relationship between the organization and the environment require that old responses be deleted or replaced in the memory and the boundaries of the firm transcended (Langlois and Robertson, 1995). A probable and desirable consequence of an ongoing state of experimentation is that the organization learns about a variety of design features and remains flexible (Hedberg *et al.* in Starbuck 1983).

As environmental changes create uncertainty, the organization could resist total restructuring because the organization's environmental maps tend to be rigid (Weick, 1969). Reframing in connection with outsourcing seems to demand restructuring of the definitions that refer to the firm's boundary and activity. Knowledge that expands and increases beyond the firm's ability to leverage is relevant to be further discussed in sourcing situations in Chapter 8.

The accumulated knowledge provides a historical perspective to organizational learning that build and modify routines. Learning indicates the dynamics of organizational routines. To coordinate knowledge and shape performance control and learning must be balanced. These interactions will be further elaborated as organizational memory, accountability, and predictability in Chapter 7.

7 Organizational Memory, Accountability, and Predictability

The second hermeneutic arc interprets the three aspects of knowledge, control, and learning in terms of intersections conceptualized as organizational memory, accountability, and predictability. Knowledge is stored in the organizational memory, out of which it can be activated and connected to learning. The analysis assumes knowledge and control to be intertwined in centers of accountability. Learning is connected to control but in the sense of change learning is opposed to control, which corresponds to stability and predictability. The dynamics of these new perspectives helps interpret the transfer and the transformation of organizational routines crossing the boundaries of a business organization, due to outsourcing.

7.1 Continuing the Hermeneutic Arc

Each theoretical perspective of knowledge management, management control and organizational learning will be classified in discourses of significance for the move from understanding to explaining the effects on organizational routines. The perspectives were open to analysis of each of the three disciplines. The aspect of knowledge was concluded in Chapter 4, the aspect of control in Chapter 5, and finally the aspect of learning in Chapter 6. The continuing analysis starts from these three aspects. They are to be confronted with each other to result in new discourses on organizational routines to reach possible explanations through these intersections.

- *The knowledge aspect*

was understood as a resource rendering simultaneous services in a complex web of social interactions. According to the evolutionary approach, knowledge was considered embedded in organizational routines (Nelson and Winter, 1982)

being the drivers of most activities and changes (March, 1981), but also the result of organizational learning that builds and changes the routines (Winter, 1996).

- *The control aspect*

was considered an important lever of performance of interest for the structure, the coordination, and the communication of knowledge in the firm. Control of performance could imply a certain way of learning. Working with prediction and control of organizational capabilities and resources was seen as generating knowledge (Loasby, 1999), presuming the 'Penrosean businessman', who believes that there is 'always more to know' about the resources of the firm (Penrose, 1959/1995).

- *The learning aspect*

was approached from both the knowledge and the control perspectives. The firm was assumed to build new knowledge around its recurrent operating routines (Cyert and March, 1963; Nelson and Winter, 1982; Rathe and Witt, 2001). Organizational learning was seen as a path-dependent process able to create new knowledge structures through combination and exchange. The learning perspective indicates the dynamics of organizational routines, but it could also be in opposition to control because control essentially gives raise to predictability and stability, not change and learning.

The intersections between the three aspects of the organizational routine are assumed to give a necessary abstraction from the world of the theoretical texts in referring to the reader's elaboration.

7.2 Intersections of the Second Hermeneutic Arc

Taking the complexity of the organizational routines into account, the aspects of knowledge, control, and learning have been elucidated as distinguishing facets presented to the viewer.

The second hermeneutic arc results in intersections concerning behavior and performance of the firm over time and through spaces. Here, the personal commitment is required to prevent the hermeneutic arc from becoming a vicious circle (Ricoeur, 1991: 167). During the process of interpretation, understanding gradually changes as explained in Chapter 2 about the hermeneutical interpretations. More than one conflicting way of interpretation with no definitive outcome is possible. However, to be able to decide on which

interpretation to choose, each discourse must be connected to a place and time, here conceptualized as an outsourcing situation that will be further elaborated in Chapter 8.

The process of hypothesis formation, also described in Chapter 2, will be enlarged by the intersections that are conceptualized as organizational memory, accountability, and predictability. The organizational capabilities and the knowledge of the organizational routines are assumed to be intertwined with control and coordination to enable simultaneity of action and consistency. Control could be opposed to learning as far as organizational learning involves a change in routines. However, controls may also facilitate learning. Learning depends on knowledge embedded in routines and firm-specific characteristics that contribute to the development of the firm. Knowledge built up around organizational routines could make innovation possible as it is assumed to balance and connect learning to the existing knowledge structure of the firm.

The statements below are grounded in the preceding chapters and the reasoning are each summarized as a follow-up:

- *Organizational memory*[31] *corresponds to carrying and activating organizational routines:*

Organizational routines are the means of communication in the organization. Routines, which are learned and retained from the activities and experiences of the organization, are stored and carried in the organizational memory that serves as a mechanism of attention able to recognize, recall and activate knowledge. "The present of past events is the memory; the present of present things is direct perception; and the present of future things is expectation." (Avetisian, 2014:3)

The organizational memory relates to organizational learning in building and modifying the routines themselves. Routines potentially relevant to the current context are thereby activated. The accumulated knowledge provides a historical perspective from which it is worthwhile to view new situations and events occurring in both the internal and external organizational environments.

[31] *Memory* according to Merriam-Webster https://www.merriam-webster.com/dictionary/memory "… the power or process of reproducing or recalling what has been learned and retained especially through associative mechanisms". Etymology: Middle English memorie, from Middle French memoire, from Latin memoria, from memor *mindful*; akin to Old English gemimor *well-known*, Greek mermEra *care*.

> … the memories of an organization can be represented as a vast collection of production systems. This representation becomes much more than a metaphor as we see more and more examples of human expertise captured in automated expert systems. (Simon, 1991: 129)

The organizational memory carries both history and future, which means that "… success at the innovative frontier may depend on the quality of the support from the 'civilized' regions of established routine" (Nelson and Winter, 1982: 131).

- *Accountability*[32] *corresponds to pre-organized interactions and the formation of organizational routines:*

Interactions create knowledge through generation and selection of skills, processes, and procedures (Loasby, 2000). Pre-organizing means being organized beforehand; specifically, occurring, or apprehended by an antecedent organization. Controlling interactions that coordinate knowledge and shape performance is referred to as accountability (Hoskin, 1996). Accountability plays a central role in securing the routine interdependence of action, serving as a mechanism of attention to motivate performance (Kerr and Slocum, 1981). Knowledge of the routines reveals the behavior of the firm (Nelson and Winter, 1982) and control is about coordination and as such intertwined with behavior. Knowledge links the structure and the agency of the organizational routine to the normal operation of the firm (Penrose, 1959/1995; Nelson and Winter, 1982). Control shows how formal, information-based routines and procedures maintain, or alter patterns (Simons, 1987, 1995; Merchant and Otley, 2007) that emanate from values and norms in the organization with "… the power to control and direct each bit of work in the organization" (Itami, 1987: 23). Knowledge and control are intertwined in centers of accountability that correspond to interactions and organizational routines. The worst threats are changes that escape the control system i.e., keeping the routines is understood as keeping knowledge under control.

[32] *Accountability* from Merriam-Webster's Collegiate Dictionary: an obligation to accept responsibility or the consequences for failing to do so or to account for one's actions; Etymology: Late Latin computes, a calculation; liable to be called to account mid-1400 in Anglo-French; accompt course of business dealings requiring records from 1640s in late Middle English.

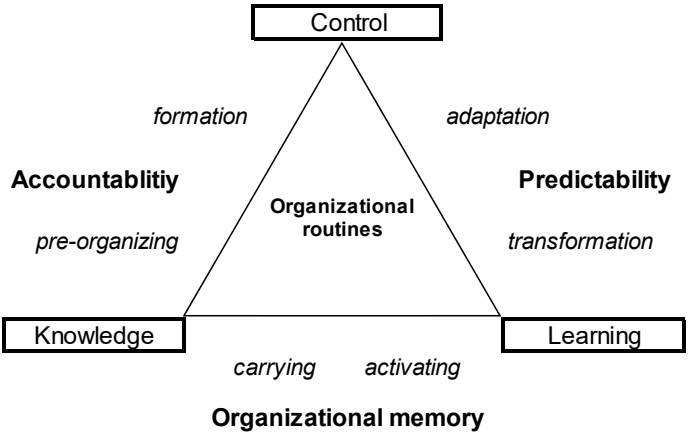

Figure 7.1 Aspects and intersections showing the interaction of the organizational routines

- *Predictability*[33] *corresponds to adaptation and change that result in the transformation of organizational routines:*

Control and learning are both concerned with how organizational routines adapt to ensure that they fit with the environment (Kloot, 1997). Predictability is seen as adapting and transforming routines. The outcomes of aspirations are targeted and controlled. The dilemma of implementing controls attends to how the organizational routines may impede or facilitate learning (Argyris and Schön, 1978). Organizational routines are transformed through uncertainty, adjustments, and re-organization (Dunbar, 1981). Learning indicates the dynamics of organizational routines (Nelson and Winter, 1982; Cohen and Bacdayan, 1996). Control systems could facilitate comparison and thus learning. Predictability emphasizes development "… balancing control and learning is critical to managing the tension between efficiency and innovation." (Simons, 1995: 21) Controls systems can be proactively used in identifying and linking routines that undergo transformation so that new solutions do not have to be invented from scratch. However, there is a suspicion that control impedes learning. Control is expected to be in opposition to learning because it presupposes stability not change and is "imposing the routine's order" (Nelson and Winter, 1982: 113). Control, utilized to handle organizational learning, plays

[33] *Predictability* Merriam-Webster indicatable in advance on the basis of observation, experience, or scientific reason; foretell, prophesy, from Latin *praedicatus*, from *prae* before + *dicere* say.

an integral role and gives raise to predictability, which connects back to the knowledge base and the formation role of accountability (Simons, 1994).

The three intersections memory, accountability, and predictability will be separately discussed in Sections 7.3, 7.4, and 7.5. Section 7.6 discusses how boundaries acknowledge the context of the organizational routines, before meeting the organizational routines recontextualized outside boundaries and out of context in Section 7.7 and in Chapter 8.

7.3 Memory Carrying and Activating Routines

The memory is viewed as a social phenomenon manifested at organizational, group, and individual levels (Argyris and Schön, 1978; Weick, 1979), where employees build knowledge and skills by working closely together.

The organizational memory is the means of communication that carry organizational routines in interactions. Knowledge is activated in learning through generation and selections of skills, processes, and procedures (Loasby, 2000). Operational knowledge and learned behavior are based on successful performance of the firm in the past, stored in organizational routines. The knowledge base constitutes the firm's memory, held in the firm's files, records, procedures, and policies, as well as in its culture, 'theories-in-use' (Argyris and Schön, 1996), and 'communities of practice' (Brown and Duguid, 1991).

Knowledge is the main intangible ingredient that makes innovation possible (Sánchez *et al.*, 2000: 312). The organizational memory based on routines is assumed to balance and connect learning to the existing knowledge structure of the firm. Given the important role of organizational routines for the behavior of the firm, it follows that to create change, routines may have to be designed or redesigned. Organizational routines coordinate and combine processes of knowledge of the employees, of the organization, and of the environment and highlight dependence and exchange between different levels (Moran and Ghoshal, 1996). Technical infrastructures are built up to support knowledge capture and dissemination infrastructures that support knowledge of the employees and include organizational routines to transmit and store it (Prahalad and Ramaswamy, 2000; Edvardsson *et al.*, 2000). However, technology introduced to replace routines often fail because the understanding of organizational routines is hampered by the basic characteristics discussed in Chapter 3 on organizational

routines (Nelson and Winter, 1982; Cohen and Bacdayan, 1996). Routines are history dependent, with tacit individual parts of a multi-actor phenomenon. It has been shown that if routine participants talk about the routine it "… allows them to collectively work out new ways of performing the routine" (Dittrich *et al.*, 2016: 678), which will have effect on the interpretation, the so-called 'sense-making system' (Weick, 1979, 1995), or 'system of shared meaning' (Smircich, 1983).

The similarities between individual skills and organizational routines noted by Nelson and Winter (1982) are founded on specific characteristics of the memory of the organizational members. It is closely linked to relatively inarticulate individual skills for how things are done, i.e., the tacit knowing (Huber, 1996; Philipson and Kjellström, 2019) and the articulated outcome performance that correspond to the explicit knowledge. The specialized individual routines must be more than retained in repertoire[34], they must be able to be recalled from the repertoire "… the meaning of a set of messages sufficiently rich to differentiate all the required performances from one another" (Nelson and Winter, 1982: 106). The organizational memory is closely linked to the tacit knowing of the individuals, and the required performances must be recalled and differentiated from one another (Nelson and Winter, 1982; Huber, 1996).

Employees' learning ability depends not only on the nature of the environment but also on the coping capacity, and on the dynamics that develop during the learning process (Hedberg, 1981: 14). An important premise underlying most of the heuristics[35] is that the key information required for the improvement of an organizational routine can be obtained only with the active cooperation of an employee involved in its performance (Winter, 1996).

> The process of retaining unique traits within an organization is a part of the more general phenomena of organizational memory. Since much of the memory of organizations is stored in human heads, and only a little of it in procedures put down on paper (or held in computer memories), turnover of personnel is a great enemy of long-term organizational memory. (Simon, 1991: 128)

[34] *Repertoire*, etymology: French répertoire, from Late Latin repertorium meaning both a supply of dramas, operas, pieces, or parts that a company or person is prepared to perform, and a supply of skills, devices, or expedients.

[35] *Heuristic*, etymology: "Hevreka" from Greek meaning "I found it" (that is what Archimedes exclaimed when he discovered his principle); Old Irish 1821 meaning: involving or serving as an aid to learning, discovery, or problem-solving by experimental and trial-and-error methods.

The ability to change rests further upon the capacity to replicate the capability. "Like explorers on the frontier, the intelligent organization charts a new map of learning based on its newly gained knowledge and is quick to share it." (Zander and Kogut, 1995: 76)

The Nelson and Winter (1982) proposition that organizations have well-defined routines for the support and direction of their innovative efforts is compatible with the routinized innovation of Schumpeter. The 'absorptive capacity' is determined by experience and past experiences on which the organizational memory is built (Cohen and Levinthal, 1990).

The role of the organizational memory is to uphold, store, and retrieve organizational routines. The memory is the conceptual framework for interpreting and determining the range of the organization's potential behaviors. It is dependent on that the personnel turnover does not create great loss of the human components of the organizational memory and that norms and methods for storing and retrieving information are efficient (Huber, 1996). On the other hand, it is also claimed that organizations do not have the capacity to absorb individual knowing into the firm if employees expand and increase beyond the firm's ability to lever it (Bontis, 1999). Commitment to existing rules, routines, and procedures seems to increase the more frequently they are used to interpret information (Dunbar, 1981: 107). According to Nelson and Winter (1982) the firm provides a memory context that is selected by interaction with the external economic reality and stored in the routines available to future generations of employees (Spender, 1996: 50). Carrying the memory includes the carrying of organizational members "… especially with respect to retention of tacit knowledge." (Huber, 2011: 105) The boundary between the explicit knowledge and the tacit knowing is both porous and flexible, so there can be said to be traffic between the domains.

Organizational routines can present a potential lever of organizational performance, if the interaction between different organizational levels and between the organization and the environment relies on formal routines connected to accountability structures, where accessibility and channels are available for storage and retrieval:

> The routines that record lessons of experience are organized around organizational responsibilities and are retrieved more easily when actions are taken through regular channels than when they occur outside those channels ... (Levitt and March, 1996: 527).

Standardizing the retrieval of knowledge may underestimate the richness and validity as well as experimentation connected to the aspect of learning even if the aspect of control reduces cost and increases reliability. Knowledge, stored for use in the future, involves anticipating future needs and the question of predictability to be discussed in the next Section 7.4.

7.4 Accountability Pre-organizing Interactions of Routines

Accountability plays a central role in securing interdependence of action of the routine. Accessing knowledge and control of action is a way of organizing accountability. Accountability involves the institutionalized social practices, through which conditions and consequences of actions and relationships are reflected upon in terms of knowledge and control (Roberts, 1996). The system of accountability embodies a moral order of reciprocal rights and obligations that are reasons for action (Roberts and Scapens, 1985; Ahrens and Chapman, 2002). "Complex tasks, unobservable behaviors and messy interactions …" are rendered measurable, visible, and manageable with cost controlling bound up with career-based identities and hierarchical accountability (Ezzamel *et al.*, 1997: 459).

Hierarchical, functional, or divisional patterns are reproduced in the process of accountability (Roberts and Scapens, 1985). Responsibilities are established, and hierarchical authority defined through processing information. The individual manager, the team, or the employee, being the focus of decision-making and responsibility accounting, is the center of accountability (Ezzamel *et al.*, 1997).

Knowledge is presented as somehow independent of the interests of those who produce and use it. The success of delegation depends on the experiences of the employees working together and deciding upon action to further the interests of the firm (Barnes, 1977). The services that can be rendered are enhanced by the knowledge of the fellow-workers, of the methods of the firm, and of the best way in which they are working (Penrose, 1959/1995).

The knowledge structures of the organization determine roles, responsibilities, and authority (Edvardsson *et al.*, 2000). The shaping and controlling of social relations to coordinate performance is referred to as accountability (Hoskin, 1996) even though "… executives tend to think of accountability in terms of outcomes." (Munro, 1996: 3)

> One of the dangers of accounting information is that it offers a fragmented, atomized image of activity; an image of organisation as no more than the sum of individual effort and results. Caught in this image we then fail to recognize that accounting's productive potential is only realized through how it is used in accountability. (Roberts, 1996: 55)

The control systems are actively used to build credibility through accountability, after the communication of beliefs and boundaries (Simons, 1994: 176). The most fundamental problem for the process of routinization is the transition that handles everyday conditions. The face-to-face nature of the relationship will have a decisive effect on the form of accountability. The formal context of a meeting is a source of mutual knowledge. The existence and value of knowledge must be discussed from the understanding that all workers are knowledge workers (Drucker, 1995; Collins, 1997).

However, accounts have the 'expressive' position, revealing knowledge authority, but open to processes of surveillance and sanctioning (Munro, 1999). Explanations given or interpretations made based on the accounting information can be questioned or challenged (Roberts and Scapens, 1985: 451). The significance is open to negotiation and accountability will be shaped by the knowledge that each person has of the resources at disposal. It is further interpreted and understood within the shared context of extensive mutual knowledge, where the superiors are dependent on the activities of subordinates to secure future results. Accounting information is an imposed understanding, produced within a system of dominance, usually produced at a distance from the context, where the relative importance of accounting information increases as a principal bearer of knowledge (Roberts and Scapens, 1985; Roberts, 1991).

The commitment that a company has to its relationships with other companies also becomes critical, because embeddedness means that the company never has full control (Ford *et al.*, 1998: 127). 'Structural embeddedness' arises from sharing one or more foci of activity with one another and thereby developing common relationships among activities. Structural embeddedness describes the impersonal configuration of linkages between people or units. It is less under the control of the individuals and tends to be more stable than other properties of relationships like for example the personal relationships people have developed with each other through a history of interactions, known as 'relational embeddedness' (Granovetter in Feld, 1997: 91-95). As Granovetter (1985) suggests, the nature and extent of structural embedding provides a context for much of the interaction

that takes place within and between organizations, acknowledged by the boundaries to be further discussed in Section 7.6 below.

Accountability is a critical rule and norm enforcement mechanism between the individual decision-makers and the social system to which they belong (Kreiner, 1996). Accountability is established when a willingness to be held accountable for the present and subsequent acts is declared (Jönsson, 1996b). It is difficult to establish both the exact object of accountability and the timing.

> The literature states (implicitly or explicitly) that there is a focal actor whose action, decision, or judgement are being evaluated by others. In practice, it is not so easy to determine who the actor is, what the conduct is, and who are doing the evaluation. It seems that, in part, the action is 'constructed', evaluators mobilized, and actors identified in the very process of accountability. (Kreiner, 1996: 87)

With routinization, rules in some form always come to govern. Hierarchical rules offer a variety of forms of relief by protecting collective action from the intrusion of irreconcilable personal differences and mitigating the destructive potentialities prevailing within localized communities of practice (Lindkvist and Llewellyn, 2003: 267). In the context of knowledge-intensive work, top management often lacks the necessary competence to exert control in a strictly hierarchical sense and to judge the work done by concerned employees (Jönsson, 1998). Lindkvist and Llewellyn (2003) recognize the interplay between a variety of formal and informal mechanisms. They do not see the individual as imprisoned by the hierarchy of the system and believe that the individual possesses the power to control behavior and self-regulation interlinked with accountability. Looking at individuals as able not only to adapt to hierarchical rules, but also to relate and reflect, points at the importance of accountability and assumes, in an interpretative approach, that knowledge sharing is based on a common translated meaning between actors (Carlile, 2004).

The role of accountability to pre-organize the structure of interactions of control and knowledge is of importance for the formation of organizational routines. Normally, an organization has no trouble conforming to the routines formed because the control process tends to resist mutations. The following Section 7.5 will look at how routines are being stored and able to be retrieved out of memory.

7.5 Predictability as Adapting and Transforming Routines

Predictability corresponds to a state of knowing, to adaptation and transformation that are likely for organizational routines due to uncertainty, adjustments, or re-organizing with an effect on behaviors and resource flows of the organization. Trust in terms of resources, norms, and knowledge embodied in the memory helps create predictability and reliability of action (Kramer and Tyler, 1996). The managing and control aspects support predictability and highlight altering patterns in line with the definition of management control systems as "… the formal, information-based routines and procedures used by managers to maintain or alter patterns in organizational activities." (Simons, 1994: 170)

Patterns in organizational activities include not only goal-oriented activities and expectations, but also unanticipated innovation, experimentation, or other issues that embody learning into organizational routines. Learning is seen as an increase in knowledge that alters the significance of the resources of the firm. For the creation of new knowledge, the internal organization may, within limits, be superior to market transactions (Nahapiet and Ghoshal, 1998). Alteration of routines takes place after a 'conflict' with the environment. It creates an adaptation of the routine, considered as innovation, when routines do not function and need a new combination (Nelson and Winter, 1982: 126). Organizational learning and control systems are both concerned with the fit between the organization and its environment. The "active interest in prediction and control" to generate knowledge (Barnes, 1977: 5) corresponds to the purpose of learning in the sense of improving performance and mastering the environment (Katona in Hedberg, 1981: 5). Different levels of organizational learning are related to different management control system characteristics, which have an important role in facilitating learning (Kloot, 1997).

Control processes tend to "… resist mutations, even ones that present themselves as desirable innovations" (Nelson and Winter, 1982: 116). Therefore, firms are expected to behave in the future in ways that resemble the behavior of the past. Many competencies reside within routines embedded in the firm's operations and knowledge base. To avoid the difficulties in departing from its prevailing routines, an organization is expected to follow the path of least resistance whatever change takes place because "… organizations are poor at improvising coordinated responses to novel situations." (Nelson and Winter, 1982: 125) Many activities in firms are so taken for granted that decision-makers no longer even question the

rationality of these activities. Organizational routines persist just because they have always been done in this way (Oliver, 1997). To produce some degree of predictability, people trust in routines and in individuals that conform to routines (Garsten and Grey, 1997; Grey and Garsten, 2001). Tasks themselves provide predictability and so do employees' experience, knowledge, professional orientation, cohesive work groups, organizational training, and development programs (Kerr and Slocum, 1981).

The differences among firms in how resources are selected and accumulated have impact on the transformation of organizational routines. Resources, acquired in factor markets, or built up through cumulative firm experience, are selected by routines that coordinate and deploy input factors to perform tasks. Coordination is stored in the routine functioning and remembered by doing, which, however, tends to limit the scope of capabilities of the individual firm.

If the firm is presented to rapid changes, existing routines are likely to be overwhelmed. When certain tolerance levels are exceeded, actions to redress are enforced in the form of exit or voice (Hirschman, 1970) that signal discrepancies between expectations and realization. The organization must adapt its routine or see them go seriously out of control. Consequences of control lapses may cause lapses of the organizational memory that disturb the continuity of the routines and the predictability. The problem with 'keeping things under control' could be an insidious threat to the maintenance of a routine, especially if it escapes the control system unnoticed, or is susceptible to 'symptomatic relief' that leaves adverse underlying trends uncorrected (Nelson and Winter, 1982: 117). In coping with changes, control routines are used to formalize beliefs and behaviors, define and measure critical performance variables, and to cope with uncertainties (Simons, 1994).

Routines, seen as regular behavioral patterns, indicate predictable change in form of for example expansion achieved with faultless replication of routines, or contraction seen as a scaling down of the same routinized pattern of operation, assuming that imitation of routines can be accomplished perfectly (Nelson and Winter, 1982: 135). Innovation, on the other hand, is conceptualized as a search process in contrast to the routine activity undertaken by firms. The search process is different from the routine response and behavior in the sense that it is irrevocable, contingent, and characterized by uncertainty (Nelson and Winter, 1982; Sanchez *et al.*, 2000).

To create predictability and cope with different external or internal uncertainties and interdependences, Thompson (1967) described different characteristic ways:

The firm could try to regulate the boundaries and incorporate the environmental actions into the organization. The response to flexibility is important in cross boundary coordination between organizations, where the flexibility of the boundary roles the routines and counts for the transfer of knowledge and learning to get access to effective technology, methodologies, and practices (Aldrich and Herker, 1977; Kellogg *et al.*, 2006).

In a more variable and unpredictable situation, the firm could search for boundary-spanning links to bugger environmental fluctuations and isolated the technical core. In a relatively stable and repetitive situation the firm could try to hedge itself from the environment by treating subsystems as closed and establishing routines, coordination, plans, and schedules to constrain action.

Both the environment and the organizational routines are assumed to influence the probability to learn as discussed in Chapter 6. Resource-based theorists assume that managers make rational choices bounded by uncertainty, information limitations, and heuristic biases (Barney, 1991; Oliver, 1997). However, highly productive, non-imitable resources will be of limited value without organizational routines that deploy them.

Barriers to resource mobility may be bounded by social judgment, historical limitations, and the inertial force of habit (Oliver, 1997: 706), which is of uttermost interest when looking at routine transformation. Crucial is the speed with which new routines are embedded or integrated into the firm's existing knowledge base and routine repertoire, as well as the frequency with which routines, once integrated into the firm are re-evaluated and transformed. It is assumed central for how to consider predictability in terms of organizational learning and control. From a routine-based, history-dependent, and target-oriented view, routines that adapt to changes have effects on behavior and resource flows. A fundamental feature of routines is that they are context dependent.

> Management control systems affect the understanding of what those changes mean, how and what solutions might be generated, and a perception of whether the time had come to uncouple the organisation from old structures and operating paradigms to move to new structures and paradigms. (Kloot, 1997: 69)

Boundaries define the context of the organization; thus, allow and control input-output flows of exchange.

7.6 Boundaries Acknowledge the Routine Context

The organizational context gives meaning and effectiveness to the operation of memory, accountability, and predictability, as they were assumed to depend heavily on firm-specific characteristics. As Penrose (1959/1995) notes, as soon as resources cross the boundary and come into the firm, the range of services they are capable of yielding starts to change. The context is physical, regarded as tools, equipment, plants, and layout, or motivational or relational, capturing how, when, and whether the agent performs the routine (Winter in D'Adderio, 2011: 202).

Boundaries, as a defining characteristic of organizations, link the organization to its environment over time. The boundary indicates the limit as a distinctive line that separates what is within an organization and what is in the external environment with which the organization interacts (Aldrich and Herker, 1977). The firm's fundamental decision is to decide what activities to undertake within its boundaries and what activities to be implemented through market transactions (Williamson, 1979). The organization theory provides us with two complementary perspectives on the nature of boundaries:

> The economics perspective is based on an external, explicitly defined notion of legal ownership; the boundary distinguishes between what the organization owns and what it does not (Demsetz, 1983). The sociology perspective is based on an internal, tacit notion of belonging (Durkheim, 1938) whereby the boundary appears between those who identify with the organization and those who do not. (Schotter *et al.*, 2017: 406)

Boundaries constitute limits of knowledge transfer, monitoring, and control, and are barriers for information flow (Aron and Singh, 2005). From the SunLibrary case in Chapter 1 it is observed that "Sun needed the barriers to ensure that outsourced staff was truly outsourced." (Hill, 1998: 47) The nature of the boundaries,[36] facing the outer competitive environment and the inner organizational routines, produces or restricts the organizational context. Boundaries are intangible, but they often give rise to tangible structures, like contract stipulations as also shown in the SunLibrary case where "… to comply

[36] *Boundaries* may differentiate in time and space, distinguish between stock and flow, between flexible and sustainable (Mouritsen, 1999; Mouritsen *et al.*, 2001) between information and knowledge (Fahey and Prusak, 1998) or between past and future.

with state and federal regulations for contract staff, Sun had established procedures that defined and limited the scope of interaction between regular Sun staff and contract staff." (Hill, 1998: 47)

The fundamental underlying assumptions, called managerial frames, are a corporate equivalent of 'genetic coding' that limits management's perception to a slice of reality.

> Every manager carries around in his or her head a set of biases, assumptions, and presuppositions about the structure of the relevant 'industry', about how one makes money in that industry, about who the competition is and isn't, about who the customers are and aren't, about what customers want or don't want, about which technologies are viable and which aren't, and so on. (Hamel and Prahalad, 1994: 49)

Boundaries also exist within organizations, i.e., between subunits or between different project groups, or different professions. The boundaries that hold together a community of practice are at the same time a source of difference and a cause of difficulties in relations that cross boundaries. Boundaries are often based on the presence, or on the absence of shared work practices rather than formal position within an organization's hierarchy (Lave and Wenger, 1991). Such boundaries, found within Sun Microsystem Inc., were believed to hinder the capacity of SunLibrary to provide the right services (Hill, 1998).

Boundaries perform two simultaneous functions, identification and division: Identification means that the organization is identified in terms of those, who share a common identity, often operationalized through their understanding of the external environment and manifested in the creation of routines and operating procedures that may result in a common basis of sense-making (Weick, 1988, 1995). It is mentioned for example that the library's unwieldy name, Sun Corporate Library and Information Services, was truncated to SunLibrary to demonstrate a more familiar identity with Sun (Hill, 1998).

Division, on the other hand, is understood in the sense of a world divided into 'us and them' that thereby identify 'us'. In the SunLibrary case the status of 'us' is emphasized with a division line: "… our status as contract employees kept a glass wall between us and Sun, precluding top-notch service." (Hill, 1998: 46) Boundaries both bond and bridge:

> As such, boundaries underlie both bonding ties (that arise within homogeneous groups) and bridging ties (that arise between heterogeneous groups). Thus, at the most general level, boundary spanning is the process of building or strengthening bridging ties. (Scotter *et al.*, 2017: 14)

In the SunLibrary case, old and new librarian routines reached each other and could develop in supporting knowledge and organizational learning with the librarian Cynthia Hill acting as "… a bridge between Sun, my client, and Adecco, my employer." (Hill, 1998: 46) To be able to establish a shared context that act as temporary anchor or bridge, heterogeneity is required as well as simultaneous existence in different worlds (Star and Griesemer, 1989).

Fragmentation requires a boundary spanning mechanism to coordinate activity (Carlile, 2004). Routines (or languages, stories, models) and agreements around standard procedures also represent boundary mechanism, sometimes connected to a boundary object so that joint structures could be reached by at least two organizations (Kellogg *et al.*, 2006). The structural embedding provides a context for much of the interaction that takes place within and between organizations created through the history of interactions (Granovetter, 1985). Response requests boundary spanning in form of integration tasks performed by boundary spanners (Aldrich and Herker, 1977; Levina and Vaast, 2005), by brokers (Wenger, 1998; Pawlowski and Robey, 2004), or by gatekeepers (Katz and Allen, 1985). Such role

> … requires enough legitimacy to influence the development of a practice, mobilize attention, and address conflicting interests. It also requires the ability to link practices by facilitating transactions between them, and to cause learning by introducing into a practice element of another. (Wenger, 1998: 109)

If boundary spanning is attached to specific individuals, the organization would be dependent on them, like Sun that placed a technical librarian outside in Sun's R&D site to insure response to technical inquiries. However, boundary spanning is mostly presented as an organizational function with defined roles and routines or institutionalized to limit the dependence on specific individuals (Zhao and Anand, 2013). In the SunLibrary case security and access were ensured by "… a time-consuming process to prevent unauthorized access to proprietary and confidential information" and a survey had to be completed every six months to justify the need to access to Sun equipment and Sun's intranet (Hill, 1998: 48).

Boundary works could enable the replication of an existing routine in a new organizational setting through the interplay of reflective and experimental spaces created by social, physical, temporal, and symbolic boundaries because the shape of the boundary may trigger, allow, or hinder specific forms of temporarily interaction between actors (D'Adderio, 2014; Bucher and Langley, 2016). Boundaries serve to differentiate between different points of view but also to shape domains by controlling differences (Llewellyn, 1998). The role of boundary objects is to help establish a boundary infrastructure, i.e., a common platform for communication to meet different perspectives (Wenger, 1998; Bechky, 2003). The boundary object represents knowledge of a community. It enables the changes of perspective and the altering of perspectives from one community to that of another. Representations are used as a base for negotiating to help making domain knowledge meaningful across boundaries (Kellogg *et al.,* 2006; Barley, 2015). Boundary objects in form of data representations, maps, tables, and charts, provide a focal point to help people develop interaction and shared understandings for how work should proceed (Carlile, 2002). A boundary object is a means of translation.

> Boundary objects are objects which are both plastic enough to adapt to local needs …, yet robust enough to maintain a common identity across sites. … The creation and management of boundary objects is a key process in developing and maintaining coherence across intersecting social worlds. (Star and Griesemer, 1989: 393)

A boundary object establishes a shared context that 'sits in the middle' (Star and Griesemer, 1989). Designated boundary objects may not, however, become boundary objects-in-use, if they are not locally useful and present such common identity across fields. In the SunLibrary case it is told how service information in form of circulation was prepared to show the usefulness in form of information about how help could be and was provided, instead of just the numbers of advice given (Hill, 1998).

Interaction across boundaries could be facilitated with the help of coordination structures that emerge from practice. The metaphor of a 'trading zone' is used "… to highlight how the local coordination of ideas and actions may take place despite differences in community purposes, norms, meanings, values, and performance criteria." (Kellogg *et al.*, 2006: 39).

Galison's 'trading zones' do assume stability or permanence of relations:

> … to be taken seriously, as a social, material, and intellectual mortar binding together the disunified traditions of experimenting, theorizing, and instrument building. Anthropologists are familiar with different cultures encountering one another through trade … (Galison, 1997: 803).

Trading zones coordinate actions temporarily and locally, navigate through differences in norms, meanings, and interests. Different groups agree on the general procedures of exchange even when interpretations of the objects being exchanged differentiate. A trading zone could be understood as "… a coordination structure that facilitates cross-boundary coordination in fast-paced, temporary, and volatile conditions" (Kellogg *et al.*, 2006: 39).

Cross boundary coordination uses different design structure and technology in form of display, representation, and assembly to respond to different requirements, flexibility, participation, and accountability (Kellogg *et al.*, 2006).

Boundary	Approach	Technique	Knowledge sharing	Assumptions	Challenges
Syntactic	Information processing	Transfer	In store, able to be retrieved	Stable conditions domain-specific knowledge	Change in conditions
Semantic	Interpretive	Translation	Common meaning to be found	Different domain discrepancies in meaning	Tacit and explicit knowledge
Pragmatic	Political	Transformation	Effort of learning and negotiation requested	Interests in conflict between parties	Adoption of novelty

Figure 7.2 Boundary crossing based on the framework of Carlile (2004: 558)

Boundary research is concerned with identifying different types of boundaries (Carlile, 2002, 2004) and the characteristics of the context (Brown and Duguid, 2001). The framework of Carlile (2004: 558) demonstrates three progressively complex processes, transfer, translation, and transformation, emanating out of three different approaches to boundary crossing:

- *The information processing approach, called syntactic,*

indicates that the boundary technique is an 'unproblematic' transfer. The assumption is the processing of common knowledge under stable conditions. It focuses on knowledge as a thing to store, retrieve, and transfer to support communication to be shared across boundaries (Carlile, 2004; Grant, 1997;

Nelson and Winter, 1982). Knowledge is explicit, and capable of being codified. The challenges are the difficulties in coordination that result in breakdowns due to change in conditions and incompatible codes or routines (Kellogg *et al.*, 2006).

- *The interpretive approach, called semantic,*

emphasizes the importance of developing common technique through translation. It recognizes how different domains generate discrepancies in meaning and need translation to reach knowledge sharing based on a common meaning between actors enabled by spanners or brokers. Knowledge is perceived as embedded in employee performances and shaped by the company's values and norms (Brown and Duguid, 1991; Lave and Wenger, 1991). The challenge of moving knowledge across boundaries (Nonaka and Takeuchi 1995; Spender 1996) is to recognize both tacit knowing and explicit knowledge (Polanyi, 1966).

- *The political approach, called pragmatic,*

requires the technique of transformation, if different interests and knowledge are to be shared. Transforming is not just processing or transferring knowledge, it is to deal with differences and novelties present at the boundary (Carlile, 2002). Even a close connection between a learned task and a newly presented task does not necessarily indicate easy transfer. With conflicting interests, there may be efforts in learning and costs of negotiating. It has negative impact on the boundary crossing, as far as it is a matter of departing from prevailing routines, from path-dependency (Nelson and Winter, 1982). The transformation of knowledge is shown to be dependent on teams, shared artifacts, and boundary objects that facilitate the negotiation of different interests (Carlile 2002, 2004). Domain-specific knowledge and common knowledge transformed at the boundary, where actors have different interests, generate costs in form of boundary objects such as drawings, prototypes and "trade-off" methodologies that provide the capacity to negotiate.

Differing experiences and values can create boundaries that make communication difficult. However, as the knowledge boundaries dividing actors increase in complexity, the effort to communicate increase. The simplest, the syntactic boundary, assume that communicating parties share enough to use simple information transfer. Differences in expertise knowledge render local information incomprehensible and require translation to get meaningful understandings across boundaries. The most complex boundary, the pragmatic boundary, must be resolved via negotiations prior to joint action (Carlile, 2002, 2004). Firms may respond to environmental complexity by creating 'collaborative complexity' that refers to the joint creation of structures and processes by at least two organizations so that they can collectively respond to factors that they simultaneously regard as

an increase in the complexity of their respective (and potentially overlapping) environments.

Section 7.7 will further discuss the consequences of transcending boundaries. Engaging with a wider environment, or through distant information outside of the boundaries of the firm means that interpretations by the organizational routines brackets out certain cues from consideration (Dent, 1990) and thereby affect the daily activities of the employees (Lowe, 2001). Traditional boundaries, such as culture, and geography are changing.[37] Evolving boundaries give rise to coordination and control problems that need lateral not hierarchical solutions (Meer-Kooistra and Scapens, 2008).

Social, physical, temporal, and symbolic boundaries[38] are important mechanisms through which actors engage in deliberate efforts to alter both the performance (the performative aspect) and the abstract understandings (the ostensive aspect) of given organizational routines.

> As a result, systems are interdependent across firm boundaries, performance is disembodied from ownership of assets, production and communication change rapidly, and new power asymmetries arise as control of tangible assets loses influence on control of information. (Kellogg, *et al.*, 2006)

Breaking down conventional boundaries both within and between organizations by new and innovative ways of organizing requires 'reframing' (Hedberg *et al.*, 1994: 2). Reframing involves restructuring of the definition that refers to the firm's organizational routines. The following Section 7.7 will posit routines off boundaries and out of context before turning to the outsourcing situation in Chapter 8 that will confront the consequences of organizational routines cut off the context.

[37] *Obstacles* such as trade and travel restrictions and differences in regulative practices or differences in social, cultural, religious, or political orientations are not specially studied here. Such boundaries are of particular significance for global organizations (Scotter *et al.*, 2017).

[38] *Boundaries* imposed by knowledge heterogeneity, linguistic, or semantic differences are not discussed here, nor boundaries of imagination, due to the failure to think beyond what is present and visible (Butler *et al.*, 2012; Tenzer and Pudelko, 2017 in Schotter *et al.*, 2017).

7.7 Conclusions on Boundaries

The aspects of knowledge, control, and learning of the organizational routines have been analyzed as memory, accountability, and predictability to be able to examine behavior and performance at the boundary considering the complexity of the boundaries and the boundary crossing processes. Regarding the fit between organization and environment, accountability is understood as securing interdependence of action and interpreting the coordination of knowledge. The importance of the memory of organizational routines is that it links experience to inarticulate individual skills and balance the interaction that create knowledge. In adapting and transforming routines predictability grant reliability and regulation of action.

Boundaries are demarcation lines between different worldviews that require negotiation to establish the boundary practice that refers to a joint creation of structures and processes by at least two organizations. There are different perspectives on coordination across boundaries in cross-disciplinary interaction (Kellogg *et al.*, 2006). Participants in different routines that may have conflicting motivations could complicate the coordination (LeBaron *et al.*, 2016). However, increase in complexity tends to increase the effort to communicate (Carlile, 2002, 2004). Organizations seem to respond to environmental complexity by expanding internal structures and modifying processes and routines. Here the three approaches in Carlile (2004: 558) have been used as a framework referring to the processes as transferring, translating, and transforming.

The suggestion is that outsourcing might change the firm's capacity to handle organizational routines as they end up out of context and outside the boundary of the organization. As changes are assumed to have effects on memory, accountability, and predictability, Ricoeur's hermeneutics of suspicion and the critical 'is-not' discussions are used to push the interpretation to its limit by rejecting the context of the organization and crossing the boundaries. The antonyms of the concepts are used in the following to indicate the consequences of loss. The organization is seen as released from the obligations connected to memory, accountability, and predictability. The 'out of context' aspect of the concept accountability is referred to as the antonym discharge, organizational memory as amnesia, and predictability as unforeseeability.

The conditions for change may come from both inside and outside the organization like errors and anomalies of the functioning of the routines or outside pressures in form of unpredictable changes. Routines out of context indicate a loss

of memory that makes it difficult to preserve the underlying partially inarticulate rules and indicates changes that are not being predicted or reasonably expected. It follows that accountability and predictability is difficult to reach (Kjellström, 2009).

On the other hand, focus in the following Chapter 8 will be on the possibility of sharing across boundaries, thereby trying to access memory, accountability, and predictability to cope with discharge, amnesia, and unforeseeability. It is a matter of negotiating perspectives and making trade-offs between actors and organizations (Wenger 1998, Brown and Duguid 2001).

8 Organizational Routines out of Context

Outsourcing that crosses the demarcation line between at least two organizations requires boundary creation of structures and processes. The capacity to handle organizational routines out of context and outside boundaries due to outsourcing might undergo changes, not predicted or reasonably expected. The focus of the analysis is on negotiating perspectives and trade-offs across boundaries to cope with amnesia, discharge, and unforeseeability. It pushes the interpretation to its limit by going outside the boundaries, illustrated also by a practical outsourcing case.

8.1 Outsourced Routines out of Context

The suggestion that outsourcing might change the firm's capacity to control existing knowledge and learning as well as the capacity to create new knowledge brings the discussion to a new point of departure, where organizational routines are assumed to be out of context and outside boundaries. Change of the organizational routines, which are based on successful performance of the past, is assumed to have effects on memory, accountability, and predictability. Following Ricoeur's hermeneutics of suspicion, the critical 'is-not' element will push the 'is-like' interpretation of memory, accountability, and predictability to its limit by rejecting the context of the organization and questioning the organizational structure as limit. Organizational routines, cut off context, not being 'the rules of the game', are not able to provide the same stability and meaning to social behavior (Scott, 1987). The ability to organize may be totally disembodied from what is already organized (Buckhardt, 1994).

The conditions for change may come from both inside and outside the organization. The inside conditions come from the accumulation of errors and anomalies of the functioning of the routine stored in the memory and able to be

retrieved. "This suggests that memories of errors and anomalies are important to maintain and review openly …" (Boland and Tenkasi, 1995: 356). The 'is-not' reference to the memory is conceptualized as the antonym *amnesia*[39] indicating overlooking of events due to a partial or complete loss of memory. Organizational routines are an important coordinator of the firm's activities and memory. Routines out of context indicate a loss of memory, amnesia that makes it difficult to preserve artefacts of old technology and underlying rules, partially inarticulate.

The 'out of context' aspect of accountability is thereby referred to as the antonym *discharge*[40] indicating a release, the freeing from an obligation, i.e., accounts, connected to accountability are removed, intentionally or not. Crisis is sometimes posited as a necessary condition for change like when failure is demonstrated (Hedberg and Jönsson; 1978). In the SunLibrary case, it seems like Cynthia Hill, who managed the operational side, made Sun's management aware of the discharge, the operational loss of added value and contracted responsible staff escaping to competitors.

> We have argued, then, that although accounting systems are designed to bridge physical distance, they can do this only in a partial way. In being carried out of the context in which it is produced and into contexts where different interests are operative, the significance attached to accounting information undergoes a series of subtle transformations. (Roberts and Scapens, 1985: 452)

The outside pressures for change come from the unpredictable promises, power, or excitement of the new perspective that outsourcing reveals. Predictability is thus referred to with its antonym *unforeseeability*[41] indicating acts not being predicted or reasonably expected in time or space.

The relationship over time between organizational routines and the organizational context affects the strategies and tactics used (Vámosi, 2000: 34). To redesign organizational routines, a better understanding of forces that create and maintain the routines is needed. Major reorganizations and technical investment can

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[39] *Amnesia* in Merriam-Webster's Collegiate Dictionary: loss of memory due to shock, fatigue, a gap in memory, the selective overlooking or ignoring of events or acts that are not favorable or useful to one's purpose or position; from Greek *amnesia* forgetfulness.

[40] *Discharge* in Merriam-Webster's Collegiate Dictionary: the act of relieving of something that oppresses, the act of unloading and the act of removing an obligation or liability; early 14c., from Old French *deschargier* to exempt, exonerate, release.

[41] *Unforeseeability* in Merriam-Webster's Collegiate Dictionary: not capable of being reasonably anticipated or expected of ordinary prudence to occur or exist under the circumstances; from Old English not to have a premonition.

dramatically fail if founded on a misunderstanding of the underlying system or routines. Performance is usually analyzed in terms that do not consider fundamental assumptions underlying the existing organizational routines determining the firm's activities.

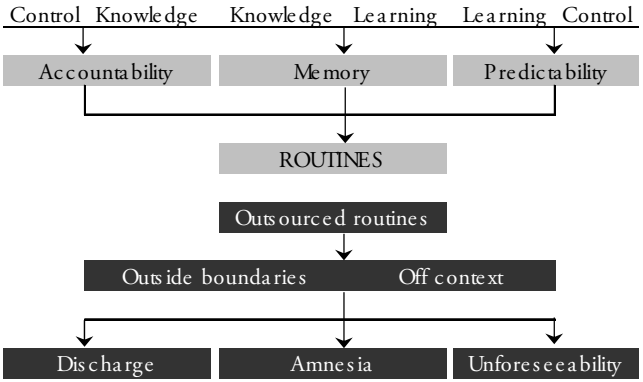

Figure 8.1 Concepts and antonyms, used to be able to elaborate outsourced routines

Organizational routines structure and pre-organize from underlying rules: heuristic rules that require sense making and interpretation (Weick, 1995) or algorithms that can be applied mechanically and mindlessly (Simon, 1991). When it comes to the transformation of routines there are underlying general characteristics explaining how general or specific the underlying 'rules' are. A fruitful metaphor for thinking about 'rules' is that they are functionally equivalent to genes, i.e. they are replicable and transmissible programmed instructions (Nelson and Winter, 1982). This is important to consider when changing the dynamics of sequential routine connections, which force the combination of technologies and actors to change (Ford *et al.*, 1998: 127).

Insights into the underlying mechanism are of importance to create new knowledge in a firm and prevent relations to become so tight, exclusionary, and durable that they create inertia. New knowledge emerges at the boundaries between specialized domains (Leonard-Barton, 1992). It can therefore be of value to describe the firm not just as a bundle of resources but as a bundle of different types of boundaries where knowledge must be shared and assessed. Knowledge sharing suggests that organization members from diverse specialties can best work

across boundaries when they share or may interpretive differences to jointly transform local knowledge.

The organization relies on previous successful behavior that strongly resists total restructuring. However, organizational routines are learned behaviors involving multiple actors that could control, design, or modify them with increased precision (Cohen and Bacdayan, 1996: 408). The multiplicity of actors involved in interdependent actions yields differences in knowledge and interests among actors that affect how novelty and its consequences are experienced (Carlile 2002). "Routines may have a harder time changing if they are coupled with routines performed by people distant from the people making the changes." (Feldman, 2000: 627)

The state of knowledge in the organizational context is thus subject to change due to different proceedings like deliberate choices, un-welcome processes, or learning by efficiency standards (Nelson and Winter, 1982: 64). As environmental changes create uncertainty, the organization could resist total restructuring because the organization's environmental maps tend to be rigid (Weick, 1969). Routines are more likely to break down when large variations are introduced in interdependent actions (Zbaracki and Bergen, 2010) because efforts are required for generating novelty through interdependent routines (Turner and Fern, 2012). To answer the question if routines "persist over time" and get affected by changes, the explanatory factors seem to be at the level of the routine, not the organization (Feldman and Pentland, 2003: 114).

The forms of coordination used for inter-firm relations largely determine innovation outcomes, on the level of firms (Nooteboom, 2000), will be further highlighted by the outsourcing situation in the following Section 8.2.

8.2 Outsourcing and Insourcing

Outsourcing is a way of producing a product or a component that involves replacement of existing routines by new and different routines, performing the same function (Horngren *et al.*, 1999).

Outsourcing occurs when a company contracts with a vendor to perform an activity previously performed in-house. A contractual outsourcing arrangement could be defined as the delegation of all or any part of the technical resources, human resources, and the management responsibilities associated with making

services available from an external vendor (Clark *et al.*, 1995; Nagpal, 2015). Outsourcing contracts range from relatively simple, well defined activities or processes to large, complex arrangements.

Outsourcing is the performance done by outside parties on a recurring basis of work, awarded based on performance, not relationships. Performance expectation, performance measures, and reporting routines are to be communicated and established (Greer *et al.*, 1999). Where management's knowledge of the industrial, market, or technological characteristics is limited, measures of performance will be based on standardized financial outcomes (Itami, 1987; Porter, 1987; Badaracco, 1991; Lei and Hitt, 1995).

Outsourcing comprises traditional service, or functional activities, but also complementary, integrative, and duplicative activities scattered throughout the company, as well as disciplines and subsystems in which outsiders have greater expertise (Quinn, 1999). Outsourcing involves transfer of technology, management procedures, staff, and vital resources closely connected to the type of knowledge possessed by the firm:

> The physical resources of the firm consist of tangible things … There are also human resources available in a firm … Strictly speaking, it is never *resources* themselves that are the 'input' in the productive process, but only the *services* that the resources can render. (Penrose, 1959/1995: 24-25)

Rapid technological change and searches for flexibility to meet uncertainties are reasons for the development of outsourcing (Deavers, 1997). The reason for handing over job to an outside expertise may be that no one in the company seems to have enough expertise to assess the needed new technologies. It means getting access to the skills of leading specialist suppliers in the areas. "If you make it yourself it will be as good as you know how, but if you buy it then it can be as good as the best in the world know how." (Ford *et al.*, 1998: 123)

Supplier relationships play an important role in the current and future performance of the organization. The suppliers' skills and resources are a complement to the organization's own internal operations and resources. Outsourcing is seen as stimulating the learning processes because it keeps the company in contact with external expertise and current information (Greer *et al.*, 1999). People perceive, interpret and evaluate the world differently, and according to Nooteboom's theory people and firms need outside sources of competence and interaction to complement the view they have developed. One reason, why inter-firm linkages are of importance for innovation and high added value is that firms

make relation-specific investments to utilize the opportunities of complementary competencies (Nooteboom, 1999). Outsourcing then involves a closer integration or strengthening of the supplier relationship. On the other hand, close relationships are costly; they require initial investments and future handling. To incorporate suppliers' knowledge, companies could also share knowledge and resources with suppliers through 'expatriate programme' in which technicians become permanent personnel in the supplier factory (Ford *et al.*, 1998: 147).

Outsourcing analyzed only as a "make or buy" decision highlights immediate cost savings and availability of production capacity, as the two most important factors of the decision to outsource. Elements of the "make" analysis include: Incremental inventory-carrying costs, direct labor costs, incremental factory overhead costs, delivered purchased material costs, incremental managerial costs, any follow-on costs stemming from quality and related issues, incremental purchasing costs, and incremental capital costs. The "buy" side of the decision that is referred to as outsourcing includes: Purchase price of the part, transportation costs, receiving and inspection costs, incremental purchasing costs, and any follow-on costs related to quality or service.

However, 'either make or buy' is considered a false dichotomy:

> … the coordination and motivation costs resulting from decentralisation are ignored in the make or buy decision, leading to a serious underestimation of the cost consequences in the "make"-alternative. The same applies to the "buy"-alternative, which for the same reasons also entails coordination and control costs. (Vosselman and van der Meer-Kooistra, 2006: 319)

Prior commitment to internal procurement could reduce the willingness to outsource, relative to a pure make or buy scenario. Outsourcing also rests on the assumption that the relations between parts can be specified. This is problematic in a cross-boundary relation and firms tend to ignore the transaction costs involved in buying services from external suppliers. Outsourcing requires collaboration between outside resources and inside capabilities (Ford *et al.*, 1998). In contrast to the waves of expansion and contraction of the value-chain, outsourcing means that functions or parts of functions of a firm are cut off and produced outside the boundaries of the firm. The consequences will, in general, not be closely predictable until a reasonable amount of operating experience has been accumulated (Winter, 1996).

The decision to outsource some parts of a company's activities will affect other aspects of its internal activities. When a company outsources a function or service,

it gives up some internal skills and routines, which may have a critical role in other connected or unconnected activities of the business. When organizational routines are cut off due to outsourcing, knowledge, control, and learning are removed from the organization. Interfaces between the outsourced activity and other operations and technology are affected and it is assumed that the organization is left with 'phantom limbs pain'.

Outsourcing also changes connected relationship with customer and other suppliers and focuses on the need to reorganize the supplier network to support the outsourced activity. Changing organizational form means a change in control (Fulk and DeSanctis, 1995).

Outsourcing, while seen as a means of simplifying operations, brings with it a new kind of complexity in form of coordination of work processes and routines during the negotiation of interests between the firm and the providers of outsourced services. Organizations also tend to respond to environmental complexity by expanding internal structures and modifying processes and routines, because without relevant knowledge about an unfamiliar or emerging technology the company does not have the knowledge to outsource (Macdonald, 1995).

Outsourcing as a strategy in business planning is seen as a lever for business innovation, global expansion and competitive advantage. The outsourcing decision is seen as "the strategic use of outside resources to perform activities traditionally handled by internal staff and resources."[42] It changes the relation between producing internally and buying externally from outside suppliers. It changes vertical integration towards downsizing, creating spin-off outsourcing of innovations (Quinn, 1992).

On the other hand, outsourcing could help to refocus on critical activities to keep control of the core competencies (Prahalad and Hamel, 1990); the very heart of the company or activities that are too critical to be entrusted to an outside (Lacity and Willcocks, 1995). Outsourcing non-strategic activities permits a department to move away from routine administration toward a more strategic role (Greer *et al.*, 1999). The concept smart-sourcing (Lacity and Hirschheim, 1993) is used when companies keep the strategic parts and outsources parts that could be done more productively elsewhere. The entrepreneurial gain of outsourcing is that it keeps the company from having to divert capital from what it does well. The company thereby takes advantage of the intellectual resources created within it,

[42] A common definition of outsourcing (The Outsourcing Institute)

but also of the resources created in its existing and potential relationships in the network (Ford *et al.*, 1998).

Even if the outsourcing company Sun, in the analyzed case (Hill, 1998), managed to take hold of the specialist knowledge from the external provider Adecco, the outsourcing operation still failed to generate the expected benefits. Sun did not worry too much about the cost even if the management fee increased, but there seemed to be some limitation in the library service level that disturbed the development, so the solution was insourcing. Insourcing means moving activities back into the company that outsourced (Hill, 1998; Brege *et al.*, 2010); a concept also known as backsourcing (Veltri *et al.*, 2008; Pankaj, 2015; Nagpal, 2015; Law, 2018).

Outsourcing has changed and evolved from vertical to virtual, tactical to strategic, cost-cutting to cutting-edge. The stakes have increased, yet it is argued that outsourcing management, i.e., the way outsourcing engagements are conducted and supervised, has remained the same (Quinn, 1999; Langfield-Smith and Smith, 2003; Kakabadse and Kakabadse, 2005; Raiborn *et al.*, 2009; Liu and Deng, 2015).

The discussion in Chapter 7 on how boundaries limit knowledge transfer, monitor and control information, and eventually angle management perception will continue in Section 8.2. Boundary crossing is a complex processing (Carlile, 2004) and in Section 8.3 the consequences for organizational routines cut off context will be further discussed.

8.3 Crossing and Extending Boundaries through Outsourcing

Crossing or extending boundaries through outsourcing have consequences from an organizational perspective. The firm is organized to have control over its resources and information. The mere handling of information is an instrument of control within the boundary of the firm (Macdonald, 1995). Reframing in connection with outsourcing requires restructuring of the definitions of the firm's worldview and of the decisions on what activities the firm might do with its resources. Boundary crossing in form of outsourcing is assumed to push memory, accountability, and predictability of the firm to its limit, which will be discussed here.

Much of the boundary research is concerned with identifying different types of boundaries (Carlile, 2002, 2004). Boundary crossing has been the center of attention in creation, sharing and transfer of knowledge (Carlile, 2002; Bechky, 2003; Garrety *et al.*, 2004). Three 'waves' of routine studies by leading scholars of the field (Pentland and Feldman, 2008; D'Adderio, 2011; Feldman and Orlikowski, 2011; Robey *et al.,* 2012; Pentland and Hærem, 2015) have been discussed in Chapter 3 to explain the role of organizational structure, technology and context that affects the survival of the organizational routines when crossing boundaries.

The obvious organizational response for acquiring needed information or resources is to capture the source, i.e., to render the external internal. The more variable and unpredictable the situation the more reliance is put on coordination by mutual adjustment based on reciprocal interdependence and high communication activity (Thompson, 1967). It is costly to seek information from external sources, because there is a need for recalibration of skills and knowledge to gain access and interact with security (Borgatti and Cross, 2003). To deal with unexpected events and insecurities, the management of Sun builds up resources to limit the scope of interaction.

However, problems involved in acquiring external information and in making it compatible with what is already in use within the firm could lead to a preference for internal sources (Nelson and Winter, 1982). "The not-invented-here-syndrome" is a hinder for using external sources and for boundary crossing. It is an almost insuperable challenge when trying to integrate information that has been produced by a subcontractor without coordination with the buying firm (Macdonald, 1995: 560).

What counts as 'internal' and 'external' can be problematized via decisions to outsource that make the boundaries between firms blurred. The space of the firm is thereby rendered negotiable. Outsourcing requires a careful coordination. The control mechanisms are extended via the information system (Montgomery, 1994). Crossing boundaries involves a command over spaces and times implicating a distinction between centers and peripheries in terms of power and influence (Giddens, 1984; Lash and Urry, 1994 in Mouritsen, 1999: 34). The transformation of control of 'production' to control of 'production at a distance' directs attention not only to the legal boundaries of companies, but also to the spaces of flows of products and services. The company doesn't have direct control of product quality, delivery and other critical performance measures, with consequences for security. The accountability is put out of play. In the case of Sun there was demonstrated a lack of confidence; for security reasons SunLibrary was

not considered "part of the team" and therefore not able to handle proprietary information and confidential inquiries (Hill, 1998: 47).

When planning and control must be exercised across organizational boundaries, the companies make use of boundary spanning with boundary objects (Carlile, 2002; Levina and Vaast, 2005) and boundary spanners (Pawlowski and Robey, 2004; Levina and Vaast, 2005). Adecco that had no library experience hired the librarian Hill as a boundary spanner for managing the functioning of SunLibrary. These boundary spanners function as brokers and translators that enable the flow of knowledge across different domains hindering stickiness of situated knowledge. However, the boundary role person, the employee who acquires and uses external information, does usually not have any organizational responsibility as had Hill as a manager (Macdonald, 1995: 561).

Changes in the scope of supplies alter a company's control boundaries. This involves important choices for a company between its wish to control its own destiny when set against the benefits of accessing the skills of its suppliers (Ford *et al.*, 1998). Boundary control also refers to how the company controls how suppliers monitor time and security controls between the outsourced project and other projects.

Outsourcing has impact on the accumulation of the knowledge of the firm (Itami, 1987; Barney, 1991), on the development of core competences (Prahalad and Hamel, 1990; Teece *et al.*, 1997), as well as on the organization's ability to learn, which is assumed to depend heavily on firm-specific characteristics and embedded knowledge (Cohen and Levinthal, 1990; Badaracco, 1991). Embeddedness means that technologies are connected into sets of complementary technology, equipment, and knowledge. These connections have their own internal logic that is a result of the development over time.

On the other hand, others (Nelson and Winter, 1982; Teece, 1998; Quinn, 1999) claim that knowledge production does require communications across the boundaries of existing organizations, and that outsourced human-embodied capabilities contribute to the firm's knowledge. Through relating resources created within the company to resources created in external relationships the company takes advantage and develops the economic potentials (Ford *et al.*, 1998). The organization brings home new information from the outside world to be mixed with resident information to shape a novel pattern of knowledge (Macdonald, 1995). Information already available within the organization facilitates what the organization is already doing but is unlikely to make a major contribution to changes. Boundaries are "… both a source of and a barrier to

innovation." (Carlile 2002: 442) The creation of knowledge through the generation and selection of skills, processes and products means that there is a great deal of internal selection; not all of which reflects external factors even though it has been usual to think of markets as the arena for economic selection.

When opportunities and capabilities exist to make a combination or exchange of knowledge, the interaction will prove worthwhile (Boland and Tenkasi, 1995; Moran and Ghoshal, 1996). However, when there is a lack of control and monitoring between firms, and when incentives are jointly set, Larson's (1992) study of interfirm exchange relationships revealed that agency theory has a limited ability to explain networking.

The prior possession of relevant knowledge gives rise to creativity in permitting linkages to be done that may not have been considered before. "Unique social and cognitive repertoires" are developed guiding the interaction of different expert knowledge groups in the process of knowledge creation (Boland and Tenkasi, 1995: 352). Huber (1996: 135) uses the concept 'vicarious' learning for organizations borrowing knowledge from each other. A similar concept is 'imitation' (Nelson and Winter, 1982; Huber, 1996) used to cope with the transfer of experience between organizations. However, to imitate may be difficult for would-be-imitators because tacit knowing and firm-specific knowledge of the routines is tricky to move between organizations. Boundary crossing is a complex processing (Carlile, 2004) and in Section 8.4 the consequences for organizational routines cut off context will be further discussed.

Boundary transforming is possible through development of a common lexicon to share knowledge, through the ability to identify and use dependencies, or through transformation of domain-specific knowledge to allow actors to work together (Grant, 1997; Carlile, 2004). Organizational learning recognizes internal factors as instrumental in the change process (Macdonald, 1995: 557). Team theory does not explain interfirm exchange relations because of its unrealistic assumption that group members have identical interests (Cyert and March, 1963; Uzzi, 1997). 'Communities of practice' assumes that individuals, through participating in similar activities, develop shared meanings in their communities (Brown and Duguid, 1991; Lave and Wenger, 1991) while the concept of 'trading zone' build on negotiation in establishing a boundary project between organizations (Galison, 1997; Gorman, 2002; Kellogg *et al.,* 2006).

Change is usually analyzed in the context of the organization in which the change is taking place. However, outsourcing changes the firm's capacity to handle change. Outsourcing means that activities, in form of organizational routines, are

cut away from the company's internal activities. To be able to understand the consequences of a change like outsourcing, the explanatory factors must be understood on the routine level, not just on the organizational level. The focus must be on how organizational routines get transformed or broken, when a function, a process, or an activity built up by organizational routines is outsourced and thus changed.

8.4 Interpretation of SunLibrary

SunLibrary is a case that illustrates the contribution of external information to internal change due to outsourcing. Texts on outsourcing conditions are used to show the understanding of organizational and extra-organizational outsourcing behavior. In investigating management of organizations, the critical hermeneutic method is useful. It is critical in the sense that it, while proceeding in uncertainty, enables self-conscious reflection on conditions around the findings (Phillips and Brown, 1993).

In the description of the article (Hill, 1998) SunLibrary is already outsourced from Sun to Adecco. It tells how SunLibrary manages to control knowledge deployment and learning. Most proposals are coming from the librarian manager Cynthia Hill, employed by the vendor Adecco, even if it is difficult for SunLibrary to add and develop certain competencies outside the boundaries of Sun (Hill, 1998).

It seems like the outsourced SunLibrary is prevented from providing relevant key services. It means that the SunLibrary case has the potential for a second hermeneutic arc discourse. The SunLibrary case captures the suspicion that outsourced organizational routines are cut off from their original activity context. The 'hermeneutics of suspicion', already described in Chapter 2 about the hermeneutical interpretation, focuses on absent organizational routines being cut off and affecting the interfaces between the outsourced activities and other operations. Outsourcing means restructuring and results in change of the capacity to handle organizational routines outside the boundary of the organization, which could result in loss of organizational memory 'amnesia', in loss of accountability 'discharge', and in loss of predictability 'unforeseeability', dramatically highlighted with the metaphor of 'phantom limbs pain'.

The interpretation of SunLibrary shows different consequences of amnesia, discharge, and unforeseeability. The consequences of amnesia signify being ignored as a business unit partner, not getting in contact with knowledge sharing or the connection to external knowledge through intranet. Discharge points at how SunLibrary must enter the new administration of Adecco. It means restructuring of responsibility being removed from Sun as a member. Unforeseeability represents that most interfaces in SunLibrary are affected, which leads to incapacity of making any long-term decisions, or changing services to be able to increase time available for more strategic projects. The consequences of discharge and unforeseeability result in problems with whom to form partnerships for creating the intranet connection for developing a knowledge sharing database. No long-term decisions affect the strategy and the financial supporters.

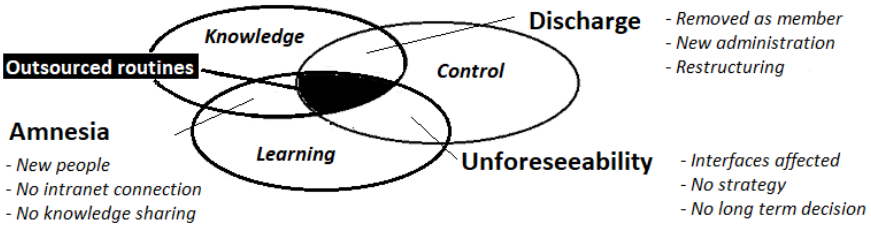

Figure 8.2 Practical consequences in SunLibrary of outsourced organizational routine (see also Section 1.6)

However, it seems to increase the efficiency that SunLibrary interacts with a set of people from Adecco. Adecco is described as an international temporary placement agency with superior administrative routines (Hill, 1998: 47). Managing the standard processes efficiently seems to have economized with staff time to get space for development. In that sense, outsourcing could be perceived as a means of achieving performance improvement in certain areas of business (McIvor, 2008). It is shown that "… routines are never entirely static, because with repetition routines can be constantly improved." (Dosi *et al.*, 1992: 192) Improvement of a routine can be obtained with the active cooperation of those involved in its performance (Winter, 1996: 464). Such involvement in performance is carried out by the librarian Cynthia Hill, employed by Adecco and other new people. So 'amnesia' reveals also the contrary image. Looking at the organizational routines as a way of doing reveals how the socially organized work is divided, managed, and coordinated in the operations, but also how the physical

technology is involved in the function (Becker, 2005), like the intranet development of SunLibrary.

The essence of routinization is an important form of storage of operational knowledge (Nelson and Winter, 1982). Firms rely upon routinized behaviors because they are efficient ways of doing an operation, if already known how to do it (Zander and Kogut, 1995). The routinization of the library enabled Cynthia Hill to bring back the research and literature searching functions. Despite the lack of organizational routines from the original library, it seems like much of the performance, important to the library, improved (Hill, 1998). It is known from theory that performing a routine maintains and develops the capabilities required to perform it (Feldman and Pentland, 2003). Without doubt, resources seem to have been managed efficiently, but the optimal solution needed Sun to contribute with special legal competence and services. The important distinction between resources and services made by Penrose indicates how organizational routines are to be compared with services rendered, not with resources that "... can be defined independently of their use, while services cannot be so defined, the very word 'service' implying a function, an activity" (Penrose, 1959/1995: 25).

Information technology introduced to replace routines often fails because of a misunderstanding of the underlying system of routines and a loss of valuable organizational memory, e.g., important individual employees must be hired back as consultants (Cohen and Bacdayan, 1996; Tomkins, 2001). If the underlying rules of the routines are heuristic they require sense making and cannot be applied mechanically and mindlessly (Simon, 1991; Weick, 1995). Routines may also preserve artefacts of old technology. In the SunLibrary case contract staff needed "... to comply with state and federal regulations" (Hill, 1998: 47).

However, it seems obvious that the 'same' routines are not involved before and after the outsourcing where Adecco is involved (Hill, 1998). According to Winter (1995), a similar set of resources can be coordinated by a very similar web of relationships in concurrent operation at different sites. It seems like in-house staff could function as system integrators to help exploit the outsourcing situation. Lacity and Willcocks (1995) found that without such integrating teams, users inevitably run into gaps of organizational memory between systems. To fill the gaps, internal expertise of SunLibrary builds their own solutions, way apart from the outsourcing contract. In such interactions driven to change existing organizational patterns, organizational entrepreneurship may occur. It demands, however, one like the librarian Cynthia Hill, a managerial insider, who "… perfectly understands the vocabularies and arguments that exist within the

company as well as shared specific codes of conduct." (Courpasson *et al.*, 2016: 151)

The sourcing process of SunLibrary seems to involve transfer of technology, management procedures, staff, and other areas of knowledge, where organizational routines are vital. Neither Adecco nor Cynthia Hill seems to have had access to the ostensive or the performative aspects of SunLibrary's routines. So, there were no possibilities in copying the routines of Sun. There were just a vision and a management plan elaborated for SunLibrary according to the level of service stipulated by the contract. The contract that specified the services is considered the artefact serving as a proxy for the ostensive aspect of a routine. Outsourcing can damage organizational learning, in the sense that decisions may be difficult to reverse (Lei and Hitt, 1995).

Transferring 'best practice', involves a large effort to set up a 'technology of replication'. Artifacts help interpret how organizational form, location and contractual agreement may have implications for outsourcing or insourcing. It implies learning to code successful routines and creating cognitive artifacts that can be diffused through flowcharts for example or generating a new routine in the actual practice adapted to the new context (D'Adderio, 2011).

If management holds that the outcome of routines is only a result of the ostensive aspect, no specification of the outsourced function or functional part is needed. If, on the other hand, performative aspects matter, control must be recognized. The performative aspects involve decisions that depart from guidelines and recognize that the functional team can change the circumstances and create learning in the team. It can be interpreted as the new administrative routines that the librarian research function developed in the SunLibrary case. The different aspects of the organizational routines, the ostensive and the performative, seem to capture the suspicion that something happens with the outsourced organizational routines, when they are cut off from their original context.

8.5 Conclusions

Collaboration involves a flow of knowledge that relates resources to each other and increases the utilization to develop the economic potentials of the resources (Ford *et al.*, 1998; Nooteboom, 2000). As the organization capitalizes on the knowledge of others, external sources of suppliers, customers, and competitors are

important as interactive processes to initiate innovation (Macdonald, 1995). Here the commitment to others becomes a critical resource (Ford *et al.*, 1998).

However, excessive reliance on a partner or a supplier results in dependency on external sources to obtain new skills and capabilities (Loasby, 1999). The complexity and variation of the environment means that a company must cope with the interdependence of the environment and through regulation of transactions achieve predictability and self-control (Thompson, 1967). The organization must adapt its routine or see them go seriously out of control (Nelson and Winter, 1982). However, the organization strongly resists total restructuring even if environmental changes create uncertainty; the reason is that the organization's environmental maps tend to be rigid (Weick, 1969). Essential coordinating information is stored in the organizational routines and 'remembered by doing', which make routines persist over time and explain path-dependency. It explains that firms are "… expected to behave in the future according to routines they have employed in the past, given an organization in fully routine operating state." (Nelson and Winter, 1982: 134)

There are different forms of coordination of inter-organizational relations that show the power of the organizational routines (Boisot and Sanchez, 2010). The organizational memory serves as an important structure of the firm's activities, while organizational routines coordinate the firm's activities. The organizational memory is based on procedures of learned repertoire of associated behaviors (Cohen and Bacdayan, 1996). Knowing that many routines are not 'stand-alone' routines but related to an implementer and that a single employee has multiple interrelationships, the elimination of an individual can damage the organization's learning capacity to an unexpected extent (Fisher and White, 2000).

The dynamic aspect of the routines is of interest because it could signify additional adjustments in sourcing operations that have consequences for the organization in form of amnesia, discharge, and unforeseeability. Studies of organizational routines as flows of ideas and actions with consequences for knowledge, control, and predictability help understand organizational routines, and how they arise, stabilize, and change, in the context of the business firm.

Outsourcing, on the other hand, reduces the size of the core organization itself and the scope of value activities performed in-house. After having decided to outsource, the problems associated with outsourcing of processes were not identified and managed by Sun as discussed in the case. Through outsourcing of the library services, the organizational routines seemed to have been abandoned, whereby the outsourcing firm Sun renounced both control and knowledge of how

to perform the library function. The routines of the library were cut off, discussed as amnesia, discharge, and unforeseeability, but were still able to support knowledge and organizational learning. It seems like old and new routines proficiently can develop and function together (Feldman, 2000; Feldman and Rafaeli, 2002; Feldman and Pentland, 2003) because "… organizational structure, physical layout, cultural values, or tacit routines – forms of memory that change only slowly over long periods and bear an indirect relationship to business performance." (Cross and Baird, 2000: 70)

It seems that there are new explanations on how to cope with outsourcing and insourcing. Organizational routines that are cut off context are 'not visible', which create a problem in documenting 'failures' of outsourcing. The new context of Adecco is shown to have participated and the manager, having lived through the outsourcing process, could afterwards be able to interpret the 'visible' outcome of the organizational routines that developed in a new context.

In Chapter 9, boundary spanning activities of importance for outsourcing and insourcing in Sandvik's unit Crushing and Screening will be analyzed. It is a discussion on how to evaluate the firm's knowledge, control, and learning capacities to be able to give a coherent view of the firm's repertoire of actions in sourcing situations.

9 Encountering Outsourcing Part I

The theoretical analysis of the different perspectives on organizational routines is limited by practical evidences on how organizational routines are cut off and put out of context due to outsourcing. The evidences are given by interviewed managers. The trends of outsourcing research are the base for the interpretation that encounters 'the specific' in form of practical outsourcing that affects the firm's memory, accountability, and predictability. The analysis continues to find interdependencies when examining knowledge, control, and learning aspects of the organizational routines from different perspectives.

9.1 Outsourcing Trends

Outsourcing can be defined as the strategic use of outside resources to perform activities traditionally performed in-house by internal staff and resources. In outsourcing an organization contracts functions to specialized and efficient service providers, who ultimately may become valued business partners (Chesbrough and Teece, 1996; Kraut *et al.*, 1999; Ferreira and Otley, 2009).

The trend towards outsourcing has been strong and sustained within business. Modern outsourcing is often traced back to 1988 to the Eastman Kodak large-scale outsourcing arrangement with three suppliers (Gregory, 1996; Oshri *et al.*, 2009). The first trend was outsourcing to lower cost vendors specialized in a limited number of core areas that involved outsourcing of volume labor-intensive manufacturing work to reduce costs.

The effects of recession in the early 1990s made cost-cutting the order of the day and forced companies much harder than before to improve efficiency and gain effectiveness by retaining core competence in-house "... justified in hard cash terms: in terms of the profits generated as compared with the opportunity costs of the capital tied up" (Hendry, 1995: 194). Outsourcing was often offshore outsourcing to distant countries, with a significant lower labor cost (Aron and

Singh, 2005; Ohsri *et al.,* 2009). "Cost, enabling core business functions, and solving capacity issues are primary drivers to outsource" according to Deloitte's 2016 Global Outsourcing Survey[43]. Outsourcing has traditionally been presented as a 'make or buy' decision to achieve immediate cost savings and availability of production capacity. However, 'either make or buy' is considered a false dichotomy, as shown in Section 8.2.

Several other pitfalls have been recognized like loss of control of work standards, reduced employee innovation, higher-than-expected transaction costs, and loss of competence when functions are taken away from the organization (Bettis *et al.*, 1992; Hendry, 1995; Lei and Hitt, 1995; Greer *et al.*, 1999; Barthélemy, 2003; Langfield-Smith and Smith, 2003; Raiborn *et al.*, 2009; Holweg and Pil, 2012). On the other hand, outsourcing to a vendor located nearby has other advantages than cost reduction. It admits a relatively close cooperation to meet change and technology, even if the benefits of lower labor costs are lost, as will be further discussed in the next Section 9.2.

To succeed in an emerging global market, it was required to build core competencies (Prahalad and Hamel, 1990). A business process of continuous improvements across the corporation was used to further provide support for outsourcing. Rapid technological change and searches for flexibility to meet uncertainties are reasons for the development of new outsourcing trends (Deavers, 1997). Outsourcing has changed from vertical to virtual, tactical to strategic, and the sourcing reasons from single non-core functions to complete business processes based on knowledge-based systems and managing processes (Aron and Singh, 2005; Kakabadse and Kakabadse, 2005, Oshri *et al.*, 2009; Gerbl *et al.*, 2015).

Outsourcing has passed on to knowledge-intensive processes as described in the next Section 9.3, by Sandvik Crushing and Screening, where variable volumes have triggered adjustment and renegotiation. Due to technological advances and changes from more service-based outsourcing also this rather product-based company has chosen to increasingly look for time flexibility and direct quality control. The flexibility to change the extent, nature, or scope of the outsourced business services is strategically important in a dynamic business environment (Lacity and Willcocks, 2001; Tan and Sia, 2006). The further development of outsourcing of knowledge-intensive professional work into business process

[43] https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/operations/deloitte-nl-s&o-global-outsourcing-survey.pdf (accessed January 2, 2018).

outsourcing (BPO) that shows the importance of work practices and personal participation will be further discussed in the Assemblin case in Chapter 10.

The decision to outsource parts of a company's activities affects other aspects of its internal activities, which is taken into consideration in the analysis of the three aspects of knowledge, control, and learning of organizational routines. Processes are said to be analyzed too narrowly, when companies only look at the direct costs and fail to examine interdependencies that must consider both location and organizational form (Aron and Singh, 2005). Benefits of outsourcing include flexibility, access to the latest and most effective technology, methodologies, practices (Raiborn *et al.*, 2009). However, even if an outsourcing company achieves cost restructuring and performance improvements in different areas of business (Lacity and Willcocks, 1995; Quinn, 1999, 2000; McIvor, 2008; Ford *et al.*, 2011) there are resistance and growing suspicions that the outsourcing operation has hidden costs. Different outsourcing studies have shown mixed results or failure to generate expected benefits (Hendry, 1995; Barthélemy, 2003; MacQueen, 2007; Freitag *et al.*, 2012; Courpasson, *et al.*, 2016).

In outsourcing, the supplier relationships play an important role because the suppliers' skills and resources are a complement to the organization's own internal operations and resources, analyzed as organizational routines. People and firms need outside sources of competence and interaction to complement the view they have developed. Outsourcing is seen as stimulating the learning processes, because it keeps the company in interaction with external expertise and current information (Greer *et al.*, 1999). However, organizations seem to prefer 'hard learning'; unless they have experienced outsourcing themselves, they do not believe in advice on how to outsource (Willcocks, 2011).

The concept of transactional relationships is used to indicate relatively long-term contacts to build a productive relationship regarding transactions between two or more actors (Vosselman and Van der Meer-Kooistra, 2006; Willcocks, 2011). Deloitte's survey also shows that "… organizations use outsourcing to drive transformational change and improve business results."[44] On the other hand, the manner, in which outsourcing management has been conducted and supervised, has remained the same (Quinn, 1999; Franceschini *et al.,* 2003; Langfield-Smith and Smith, 2003; Kakabadse and Kakabadse, 2005; Raiborn *et al.*, 2009; Liu and Deng, 2015). The organizational routines that are outsourced are understood in

[44] https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/operations/deloitte-nl-s&o-global-outsourcing-survey.pdf (accessed January 2, 2018).

a mechanistic way 'given in a black box', where a genuinely new management behavior would have been needed.

> To be effective, policies which promote the consideration of outside supply must be accompanied by the development of a range of management abilities concerned with selecting and working with suppliers and partners. (Jennings, 1996: 403)

It is assumed possible for the hermeneutic arc to narrow down instead of spiraling out of control, if the range of the interpretation of the theoretical texts is limited by practical evidences. Chapters 9 and 10 present such interrelated, interdependent, and mutually modifying processes of interpretation. A reactivation of praxis is a question of grasping the sense. The examination of a real outsourcing situation, like the cases used as illustrations in this interpretation, is not general but refers to determined time, location, organizational form, and contractual arrangements. In so doing each case "… provides one anchorage ... for penetrating the hermeneutic circle …" (Altheide and Johnson, 1994: 491).

The following Section 9.2 describes the history and the development of the Svedala plant as told by the former CEO and the official websites. The open interviews are perceived as expert voices (Kvale, 1983). Sum-ups of the interviews, translated into English, are reviewed by the interviewees before being presented. In Section 9.3 the interview with the present sourcing manager of Sandvik Crushing and Screening in Svedala is presented. Unstable environments are likely to increase the need for flexibility in outsourcing. The importance of flexibility is discussed and the work relations with vendors all over the world assisted by support teams, consultants, and learning schools are described. The interpretations[45] of the sourcing situations, location, and organizational form are concluded in Sections 9.4 and 9.5.

9.2 Interpretation through Praxis: The Svedala Plant

To understand how organizational and extra-organizational outsourcing behavior has changed, the background of the Svedala plant is summarized. The different trends of outsourcing as shown in Section 9.1 are illustrated in the following with

[45] See also Section 2.6 'Qualifying Interpretations'.

the help of the plant in Svedala that has been involved in outsourcing and insourcing over several decades.

The old Svedala plant from the 1880s were originally used for manufacturing brickwork machines and furnaces for drying, before turning into crushing machines. Equipment was transported far beyond Sweden's borders, and the company was the most important in its area. The company had its own pegs union with Svedala railway link with good transport facilities, which was favorable for the distribution and benefited the heavy industry. The Svedala plant was known as both Svedala-Arbrå and Svedala Industrier AB and was owned through the late 1900s by different groups like Allis Chalmers, Trelleborg Group, and finally in the 1990s the Finnish group Metso.

The development period of the Svedala industry was the aim of the interview[46] with the former CEO, who started in 1988 and continued through the agreement with the present owner Sandvik Group in 2001. The experiences of all types of outsourcing and insourcing during that period were the topic of the discussions.

The big volumes of outsourcing were volume sheet metal work outsourced to Turkey, as big volume and low-price outsourcing. According to the former CEO it was crucial to ensure the product quality of sheet metal materials and the measuring, bending, cutting, and shaping to make the products keep the quality. He pointed out "… how it was obvious that outsourcing in practice is trickier than in theory".[47]

To guarantee quality-assured deliveries, enough volume had to come from subcontractors in the same geographical area to incorporate knowledge, resources, and permanent personnel nearby the supplier factories to be able to control, test, and adjust mechanical precision directly at the plant. The former CEO explained how coordination was essential: "It is enough that one product in a delivery to Svedala does not cope with the standard to get delays with damaging effects on customer deliveries and capital tied up in the production."[48]

However, on the contrary, according to the former CEO, in other small volume products and key details, it was very important to work with local companies around Svedala to be able to meet and discuss and adjust all problems

[46] Telephone interview with the former CEO Nils-Evert Karlsson, April 10, 2018.
[47] Ibid.
[48] Ibid.

immediately. He was pleased to tell how Sandvik Crushing and Screening in Svedala today works with carefully controlled processes:

> The cooperation with subcontractors is so important that to get an accurate quality it is not just the quality of the products but the quality of the producing machineries that must be controlled by different expert teams that are working together to reach the result.[49]

Such ideas have matured and are well developed by the present sourcing manager of Sandvik Crushing and Screening. In the following Section 9.3, he clarifies how to transfer long experience of sourcing to a new vendor and how the 'learning schools' and the cross-disciplinary support teams in Svedala, China, India, Brazil, and Germany are working.

However, it was first in 2001 that the Sandvik Group entered the scene and acquired, through its business area Mining and Construction, the total operations of the Svedala Crushing and Screening units in Sweden and France, with sales of about SEK 1,400 M and 900 employees.[50] The agreement included Svedala Industrier's production units in Svedala and Arbrå, Sweden and in Chauny, France. The acquisition was expected to directly contribute positively to Sandvik's earnings and the plant continued to grow with more new buildings in Svedala in the 21st century.

> The products provide a natural complement to Sandvik Mining and Construction's operations and the acquisition means that we can offer our customers a complete program for drilling, loading and conveying of rock and minerals as well as crushing, screening and fragmentation.[51]

Sandvik Group, the present owner of the assembly plant in Svedala is an engineering group in mining and rock excavation, metal-cutting, and materials technology. Sandvik mining and rock technology for crushing and screening equipment has an equity story that is built on more than 150 years of leading materials and applications know-how. The machines of Sandvik, with a high level

[49] Telephone interview with the former CEO Nils-Evert Karlsson, April 10, 2018.

[50] President of the new business sector in Svedala Nils-Evert Karlsson, https://www.home.sandvik/en/news-and-media/newslist/news/2001/09/sandviks-acquisition-of-svedala-finalized/ (accessed 2018-03-02).

[51] President A. Ilstam of the Sandvik Mining and Construction business area, https://www.home.sandvik/en/news-and-media/newslist/news/2001/06/sandvik-reaches-agreement-to-acquire-part-of-svedala/ (accessed 2018-03-02).

of agility and mobility, are designed for both robustness and safety of operators and maintenance personnel.

The Sandvik Group had an amazing raw materials boom from 2000 up to 2008, when "the sky was the limit"[52] and then again, a new boost in 2013, after the worldwide recession with termination notice of employees in Svedala. It was in 2017 again at full capacity of 500 crushing machines per year in the assembly plant of Svedala. According to the sourcing manager, Sandvik Crushing and Screening, is today a product group within the division of Sandvik Mining and Rock Technology. Figure 9.1 presents all three divisions of the Sandvik Group in figures from 2016.

THE SANDVIK GROUP
conducts operations in three business areas with responsibility for research and development (R&D), production and sales of their respective products and services.

SANDVIK MACHINING SOLUTIONS
Sales: approx. 33 billion SEK (2016)
Number of employees: approx. 18,000 (2016)

SANDVIK MATERIALS TECHNOLOGY
Sales: approx. 13 billion SEK (2016)
Number of employees: approx. 6,500 (2016)

SANDVIK MINING AND ROCK TECHNOLOGY
A leading supplier in equipment and tools, service and technical solutions for mining and construction industries.
Application areas include rock drilling, rock cutting, crushing and screening, loading and hauling, tunneling, quarrying and breaking and demolition.
Sales: approx. 31 billion SEK (2016)
Number of employees: approx. 14,000 (2016)

Figure 9.1 Sandvik Business Areas in 2016 Source: https://www.home.sandvik/en/about-us/our-company/business-areas/ (accessed January 2, 2018).

In the following Section 9.3, the sourcing manager describes the boundary spanning activities of importance for the world wide Sandvik

[52] Interview with the sourcing manager at Svedala, December 20, 2017.

Crushing and Screening business. Sandvik Crushing and Screening is limited liability company Sandvik SRP AB in the business area of Sandvik Mining and Rock Technology.

9.3 Sourcing: Sandvik Crushing and Screening

The sourcing manager gives here an overview[53] over how the pleasant capacity problems with full order books are handled and how Sandvik Crushing and Screening manages to deliver with the help of hundreds of subcontractors. When the market increases and there are constraints in the internal production, one way is to call on subcontracted products to meet orders. The Svedala plant has its own machine park, but when demand is greater than the production capacity,

> … we have to look at what we can do; it is not so much a question about outsourcing or insourcing, because when outsourcing changes, it usually creates a long boot time, so now and for the future we want to invest in something that we call 'flexibility', which allows us to have a balance between our external suppliers and what we can handle ourselves.[54]

There are possibilities to reduce or add orders to balance the supply from the present suppliers in Sweden, but also from suppliers in Europe and in China from a committed level without cutting ties. The sourcing manager emphasized that to 'balance' means taking care of vendors' business in a dialogue, in which both external and internal requirements must be met.

Sourcing in Svedala takes care of indirect material, everything from toilet paper to the investment in a plant site as well as all core business and all components and products that go into the final products. When the project department must build an entire plant for a customer, sourcing is asked to help with products and provide facilities. The final products 'crushers' are produced at the Svedala plants. There is also an assembly plant in China and the aftermarket part is in Brazil. The level of costs determines which production factory to choose. All shipments within Sandvik Crushing and Screening are arranged by a company that puts the transports 'out to tender'.

[53] A summarized transcript translated into English.

[54] Interview with the sourcing manager at Svedala, December 20, 2017.

Outsourcing seems to have just a commercial focus, where components from different places are simply put together. But, as the sourcing manager points out,[55] outsourcing is not that easy a move; it is lots of paperwork to assure that it is on time, that it gets into the system, and to control that the quality is there. Once outsourcing is selected no finishing works should be required to be done in the production: "We now focus not only on outsourcing, but generally within Sandvik we focus on *premium brand*, which means that we have to be world-class in terms of quality."[56]

Outsourcing is therefore treated by Sandvik almost like a development project, where the project manager concentrates on cross-functional work – R&D, production, engineering, transportation, and logistics – people from those departments are gathered to discuss and to try to understand the needs of doing something consistent, so that sourcing gets a reliable picture. Over a certain contract amount, the global framework agreement sets the rules of game between Sandvik and the providers to clarify everything from price listing, warranty, liability, to order confirmation, and so forth.

Knowledge transfer and learning is most important; the sourcing manager explains that "… it is a question of getting back to basic communication." The biggest challenge is to be able to transfer for example a fifteen-year long experience in sourcing to a new vendor, to activate his part in the big picture, to explain his role as a vendor in the long-term thinking of Sandvik Crushing and Screening and to explain why and how adjustments are to be made. The request for quotation must be clear for the suppliers, in demands, in code of conduct, and in supply quality manuals. It is a major undertaking and it takes time to renegotiate, when ties are cut with a supplier.

There are hundreds of vendors and a dedicated supply quality in sourcing, for which the sourcing manager in Svedala is responsible. He tells how his staffs travel a lot to suppliers to set requirements, inspecting, and sampling: "A pretty good visibility in the Sandvik system makes it easy to find eventually recurring problems and to set up plans with the suppliers." The sourcing manager also tells how it works with third party and the Sandvik personnel, acting as consultants, to find development opportunities together with open minded vendors that see Sandvik employees as an asset, "as consultants free of charge ready to help with massive,

[55] Interview with the sourcing manager at Svedala, December 20, 2017
[56] Ibid.

continuous improvement efforts." There are support teams in Svedala and a support team in China, as well as teams in India, in Brazil, and in Germany.

Previously, Sandvik Group worked with shared service centers for human resources and finance, as the former President requested centralization. However, two years ago, the new President demanded decentralization – so global sourcing, human resources, and finance, are all located out to the specific product area like Crushing and Screening, which have responsibility for profit and loss and to take care of good business for the company. In the profit and loss responsibility there are three steps – stability, profitability, and growth – phases that are said to work great.

> Outsourcing and insourcing – yes of course we do it – but we call it 'flexibility'. We would rather not cut ties, we want to be flexible. Outsourcing was much about either or and after a break when you need it again, you want to act quickly and don't have the time to rework it. We want to have long-term partners that help us in bad times, running maybe at little lower volumes, but with this flexibility.[57]

Cooperation in flexibility is the responsibility of sourcing, according to the sourcing manager explaining how economists, engineers, and technicians, with big experience in purchasing, are working together with R&D, and the entire technology and other expertise of the Svedala plant. Changes between producing internally and buying externally mean that Sandvik Crushing and Screening responds to environmental complexity by expanding internal structures and routines. To be able to include suppliers' knowledge a closer supplier relationship has been built as described by the sourcing manager:

> Price, time, delivery, quality, and contract today – it is a combination that has to be evaluated all the time, even if we have a feeling, we have to take evidence-based statements. The suppliers' people are here and learn – the advantage is that we are in a plant, so we can see their products and they look at all our processes and are here to learn. It is not in the contracts, but it is a learning school here and a learning school out at the suppliers – to learn from suppliers. Communication is the basic in learning. That is how we work today. [58]

[57] Interview with the sourcing manager at Svedala, December 20, 2017.
[58] Ibid.

9.4 Interpretation of Outsourcing and Flexibility

The interpretation of the interview with the sourcing manager is done with the theoretical underpinning of this study to analyze how outsourcing and flexibility are used in Sandvik Crushing and Screening. It is significant that the sourcing manager at the Svedala plants prefers 'flexibility' instead of 'outsourcing and insourcing' to underline how corporations must work with responsibility of sourcing to keep the flexibility. This is interesting, because as Ricoeur noticed (1974: 110): "Why should we draw new meanings from our language, if we had nothing new to say, no new worlds to project?"

The remarkable findings in Sandvik Crushing and Screening are that the sourcing manager to explain 'flexibility' highlighted such concepts as knowledge of processes, control of deliveries, and learning possibilities together with subcontractors to be of importance for the firm's capacities of outsourcing rather than focusing only on quality or volume or other disaggregated autonomous contractually separated entities. The traditional picture of organizational routines as creating inertia in organizations must be changed (Feldman and Pentland, 2003). The aspects of 'knowledge', 'control' and 'learning' reflect the versatility and complexity of organizational routines as part of the normal operation of a firm like Sandvik Crushing and Screening.

Knowledge is built up in the organizational memory of the routines. The organization remembers 'by doing', but also 'by keeping' (Nelson and Winter, 1982: 99, 105). It is assumed that the knowledge of the firm is a system of coordination that combines relations and tasks into productive performance (Nelson and Winter, 1982). This system of coordination is here presented as the organizational memory described through the characteristics of Sandvik Crushing and Screening. The rational of the internal organization is to stimulate ongoing processes in the sense that the firm is assumed to have superior capabilities relative to market in developing "… knowledge about how to coordinate complex production systems …" (Foss and Foss, 2000: 17). Consequently, growth of knowledge is not a result of random learning. It is about transfer experiences and learning schools, correlated to developed procedures, competences, and techniques relevant to the ends, or objectives discussed (Barnes, 1977).

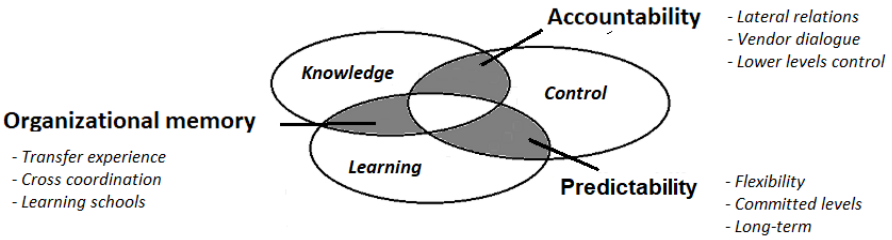

Figure 9.2 Aspects and empirical data of the organizational routine in Sandvik Crushing and Screening (see also Sections 1.3 and 1.6).

Control is about responding to the performance, about making someone accountable. Working with hundreds of subcontractors requires lateral relations "to take care of vendors in a dialogue to meet a balance"[59], which in Sandvik Group is reorganized to a lower level, to the product groups instead of the divisions.

Learning is connected to the communication structure and practice between the different organizations and the external environment (Loasby, 2000). There are several factors influencing the probability to learn, such as corporate culture and strategies that allow flexibility to promote innovation and environmental insights (Fiol and Lyles, 1985). Learning involves change but presupposes predictability to go along with control. Predictability is discussed to reach committed levels and flexibility on long term. It has been shown by the sourcing manager in Svedala how search for flexibility is used to meet uncertain volumes, to exceed projected volumes, to achieve performance improvements, and to be able to do adjustments in outsourcing.

In the literature it is presented how flexibility is one of the benefits of outsourcing, in the sense of scaling up and down volume and giving the opportunity to select service level (Deavers, 1997; Lacity and Willcocks, 2001, Tan and Sia, 2006; Raiborn *et al.*, 2009).

Bahrami and Evans (2005) further distil flexibility into three key dimensions: 'robustness', 'modifiability', and 'new capability'. These three dimensions of flexibility are here related to outsourcing relationships of Sandvik Crushing and Screening. 'Robustness' means keeping suppliers at a committed level. 'Modificability' explains how the balance between supply and demand is highlighted without cutting the ties with the subcontractors, with consequences

[59] Interview with the sourcing manager at Svedala, December 20, 2017.

that must be avoided. 'New capability' is searched for and found in the way Sandvik Crushing and Screening creates learning schools together with vendors.

A fourth dimension of outsourcing flexibility is called 'partnering flexibility' (Gosain *et al.*, 2004). Such 'ease of entry and exit' in inter-organizational collaboration with subcontractors does, however, not seem to be appreciated by the sourcing manager in Svedala. How to allow transfer of services, change of vendors, and backsourcing of an outsourcing relationship is discussed in the literature (Venkatraman and Henderson, 1998; Ybarra and Wiersema, 2003; Nagpal, 2015). The problems of switching providers arise because processes cannot be brought back and forth between organizations without operational losses and risks (Aron and Singh, 2005; Kjellström, 2017). The direct controls of product quality, delivery and other performance measures were said to be critical requirements. Difficulties, due to time and quality control issues in the production requirement, were emphasized by the sourcing manager in Svedala, where long term outsourcing without changes is preferred because "… changing vendors always prolongs the boot time and complicate the deliveries."[60] The issues considered are that an outsourcing arrangement needs to dimension sufficient capacity to tolerate, absorb, or endure transactional variation, without significant modification or re-deployment of resources.

However, productive knowledge is usually embodied, which means that transfer of skills cannot be accomplished by simply transmitting information. Sandvik Crushing and Screening very well visualizes how critical communication is when heterogeneous firms must learn to meet requirements. The sourcing manager,[61] who highlights communication to be able to share the type of knowing possessed by the personnel of both buyer and the supplier, recognizes that the transfer of technology, procedures, and resources is closely connected to functioning communication.

Boundaries between different organizations that represent different worldviews require negotiation to make communication possible. Information technology introduced to replace routines often fails without the tacit knowing of in-house staff as system integrators. The importance of people as critical to tacit knowing could be expressed as 'no tacit knowing without people' (Polanyi, 1966). It seems as if Sandvik Crushing and Screening and its suppliers enlarge the concept of communication to include an open, mutual communication between the different plants, explained as 'learning schools', where cross-functional work is needed to

[60] Interview with the sourcing manager at Svedala, December 20, 2017.
[61] Ibid.

get a reliable communication. These learning schools are used as boundary objects for boundary spanning (Carlile, 2002; Levina and Vaast, 2005) to enable the flow of knowledge across different domains that usually could be problematic. In Sandvik Crushing and Screening the boundary crossing actors are supposed to work together and share or transform knowledge. Knowledge and resources could also be shared with suppliers through 'expatriate programme' (Ford *et al.*, 1998: 147), like in the plant in Svedala, where technicians and personnel visit and work in both Svedala and in the other factories. This highlights that outsourcing also need collaboration, i.e., not just communication, between outside resources and inside capabilities to stimulate the learning process (Ford *et al.*, 1998; Greer *et al.*, 1999).

Flexibility to change the extent and scope of outsourcing is especially important in a dynamic, i.e., cyclical environment, emphasized with the raw materials boom, recession, and full capacity in the assembly plant of Svedala described in Section 9.2. Flexibility in the boundary role routines (Aldrich and Herker, 1977; Kellogg *et al.*, 2006) supports the transfer of knowledge and learning to get access to effective technology, methodologies, and practices.

The boundaries of the organization are challenged by outsourcing, which means that firms in some respects renounce 'organizational memory', 'accountability', and 'predictability'. Outsourcing affects the operational systems, cuts up, and replaces organizational routines (Freytag *et al.*, 2012). The accountability is put out of play, when planning and control is exercised across boundaries, through boundary objects. Outsourced routines are removed from the accountability of the organization (Elharidy *et al.*, 2013) and affect the organizational memory. When organizational routines are cut off, interfaces between the outsourced activities and other operations and technology are affected. Outsourcing means restructuring and results in difficulties of the firm's capacity to handle organizational routines out of context and outside the boundary, which could result in 'amnesia', 'discharge', and 'unforeseeability', dramatically highlighted with the metaphor of 'phantom limbs pain'.

Treating boundary spanning activities could be problematic. Professionals in organizations need boundary-spanning to maintain contact with technology and the professional reference groups in the field. The function of boundary roles may be summarized as an organization's ability to adapt to the environmental contingencies depending on the expertise in selecting, transmitting, and interpreting information originating in the environment (Aldrich and Herker, 1977). To arrange for the transfer of knowledge and experience over time, the company Sandvik Crushing and Screening applies the boundary spanning role of

the sourcing manager and the cross-functional expert groups. This is underlined by the sourcing manager in Svedala telling about the different boundary roles played by both the Sandvik people and the suppliers in developing functioning cross-boundary routines, underlining that outsourcing is not simply components put together from different places.

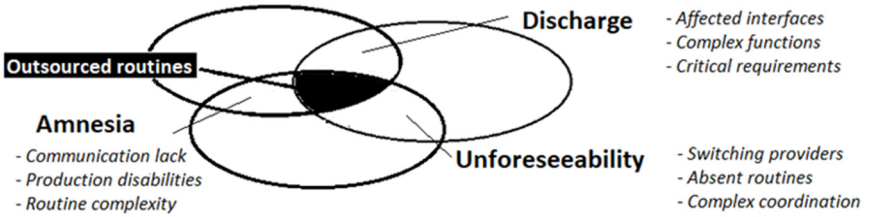

Figure 9.3 Practical consequences in Sandvik Crushing and Screening of outsourced organizational routines (see also Section 1.6).

Outsourcing means loss of organizational memory, in this case production disabilities and complexity in communication. Loss of accountability as discharge shows how the interfaces with the many subcontractors are affected and coordination is required, when functions and requirements change. The discharge problem is related to the heterogeneous exchange to meet requirements, or to modify organizational routines, which then indicate learning or change exactly as in Sandvik Crushing and Screening. The sourcing manager in Svedala is conscious about the range of management abilities required to be effective in selecting and working with suppliers to keep up with the predictability. In the literature it is documented how inter-firm linkage creates possibilities to reach complementary competencies (Nooteboom, 1999). The support teams and the employees as consultants are specific spanning activities used by Sandvik Crushing and Screening to bridge boundaries with the motive of getting access and stimulate learning, also when it requires investments, as discussed in Chapter 8.

As practical consequences of outsourcing, the sourcing manager of Sandvik Crushing and Screening mentions lots of paperwork, time check, quality control, system set-ups, and other finishing works required in the production. It leaves the organization with 'phantom limbs pain', emanating out of the daily routine activities. It is difficult to keep up with both consistency and flexibility with partners outside the company, when connections to internal routines are lacking and diminish the effectiveness of the remaining activity system (Turner and Rindova, 2012).

However, the wording 'lots of paperwork', mentioned by the sourcing manager, indicates that traditional management control systems are too inflexible for the lateral relations needed in working with many suppliers (Van der Meer-Kooistra and Scapens, 2008). To ensure coordination among the many actors in the value-chain, traditional management systems do not give enough information about and control of the value chain. When it comes to management accounting both internal and environmental changes require flexibility, a wider focus, and willingness to learn (Otley, 1994). One way to resolve this is, according to the sourcing manager, to locate accountability to the specific product area. Accountability at lower levels, measured as stability, profitability, and growth like in Sandvik Crushing and Screening, could enable the organization to be flexible and cope with uncertainty, according to the theoretical examination of the management control perspective in Chapter 5.

The biggest challenge, according to the sourcing manager, is to be able to transfer many years of experience about outsourcing to a new vendor to activate his part; that means to try to overcome 'amnesia' i.e., to activate the memory or to build new memory. He explains that sourcing is not just about having a product available and possible to buy on the world market, because candidates for outsourcing are more complex to integrate than separate functions or activities (Greer *et al.,* 1999; Bengtsson *et al.,* 2009). It is known from research that knowledge and experience need to be shared between parties in lateral, not hierarchical, relationships to reach co-operation and flexibility (Meer-Kooistra and Scapens, 2008). Activities, in spanning the boundaries of the firm, need to underpin flexibility, interdependence, learning, participation, and accountability (Kellogg *et al.*, 2006; Van der Meer-Kooistra and Scapens, 2008).

9.5 Closing the Analysis

Given an organization in fully routine operating state, like Sandvik Crushing and Screening in Svedala, control procedures could struggle against changes and sacrificed flexibility that are the price to pay for efficient routines.

It must be highlighted that outsourcing of organizational routines influences behavior and could create genuinely new behavior. This would exclude the suspicion that deliberate flexibility for the Sandvik plant in Svedala results in non-compulsory flexibility with negative consequences for the subcontractor. Instead outsourcing seems to be employed to achieve improvement in performance of

both parties. This would be proven by the importance the sourcing manager in Svedala places on the mutual 'learning schools', where tacit knowing is transferred between the parties, implicitly understood as influencing behavior.

Even if outsourcing is a means of simplifying operations, it brings lots of work, coordination of processes and routines, and negotiation with the providers to develop relevant services (Macdonald, 1995). The routines reveal both how the physical technology is involved, and how the socially organized work is divided, managed, and coordinated.

In short, competences and capabilities, and the routines upon which they rest, are usually rather difficult to replicate. Replication could be hindered by the fact that few routines are 'stand-alone'. It means that a change in one set of routines is accompanied by changes in other parts (Nelson and Winter, 1982; Augier and Teece, 2007). Another hinder could be that the enterprise does not have the foundations in place for learning and improvement in production and in management, which is the key to process improvement (Augier and Teece, 2007).

In Sandvik Crushing and Screening, outsourcing is said to be treated as a development project using cross-functional work to be able to create something consistent and reliable. Outsourcing is seen as stimulating the learning processes through the interaction of different expert knowledge groups in the process of knowledge creation, which comprises internal selection of skills, processes and products (Boland and Tenkasi, 1995; Greer *et al.*, 1999; Carlile 2002).

Orchestrating a global portfolio of technological assets inside and outside the enterprise is therefore essential (Augier and Teece, 2007: 187). This is well illustrated by how the sourcing management in Svedala is engaging in achieving improvements in performance based on the mutual learning schools, where integration in both the parties' abilities is struggled for, as described by Jennings (1996: 403): "… a need for joint planning, management of the supply interface and the management of service developments …."

It is said that forward-thinking organizations attain competitive advantages by streamlining the value chain by organizing activities either within or outside the group (Gottfredson *et al.*, 2005; Richter and Brühl, 2017). The Sandvik Group focuses on "premium brand" to reach competitive advantage in world-class quality by working with long-time subcontractors to embrace responsibility of sourcing, i.e., accountability. It is also said that working in groups of expertise together with R&D is a cooperation that creates reliability, i.e., a base for predictability.

As discussed in Chapter 3 organizational routines can here be considered a source of flexibility that contribute to organizational learning in contrast to the traditional picture of organizational routines as creating inertia in organizations (Feldman and Pentland, 2003; Feldman, 2004; Becker, 2004; Pentland and Feldman, 2005; 2008).

To be further discussed in the next Chapter 10 is whether and when companies find outsourcing of organizational routines to be a means of achieving improvements, technologies, or cost reduction (Lacity and Willcocks, 1995; Quinn, 1999, 2000; McIvor, 2008; Raiborn *et al.*, 2009; Ford *et al.*, 2011).

10 Encountering Outsourcing Part II

This chapter introduces an additional practical illustration of how organizational routines are cut off and put out of context due to outsourcing and insourcing. The trends of business process outsourcing research are the base for highlighting a company's decision to outsource the resource planning systems. The evidences are told by the CFO that has been employed during 17 years of the company history. The focus is on negotiating trade-offs across boundaries to be able to continue the analysis to find interdependencies when examining knowledge, control, and learning aspects of organizational routines.

10.1 Outsourcing Business Processes

Outsourcing comprises traditional service, or functional activities, but also complementary, integrative, and duplicative activities scattered throughout the company (Ford *et al.*, 1998; Quinn, 1999) as the Assemblin case presented in this Section 10.2. When a company outsources a function or service, it gives up some internal skills and routines, which may have a critical role in other connected or unconnected activities of the business. Organizational routines, cut off due to outsourcing, affect interfaces between the outsourced activities and other operations. As assumed in Chapter 8 outsourcing may result in amnesia, discharge and unforeseeability, leaving the organization with 'phantom limbs' to be further discussed.

The outsourcing decision is seen as "… the strategic use of outside resources to perform activities traditionally handled by internal staff and resources."[62] Outsourcing changes the relation between producing internally and buying

[62] A common definition of outsourcing (The Outsourcing Institute).

externally and modifies the vertical integration. Altered organizational form and connected relationships result in a change of control and accountability (Fulk and DeSanctis, 1995). Outsourcing, even if it is seen as a means of simplifying operations, tends to respond to environmental complexity by expanding internal structures and modifying processes and routines (Macdonald, 1995). Besides in-house and markets to achieve economic cooperation, networks relying upon cooperation and trust "… enable organizations to access complementary resources, achieve economies of scale and reduce overhead." (Jennings, 1996: 395)

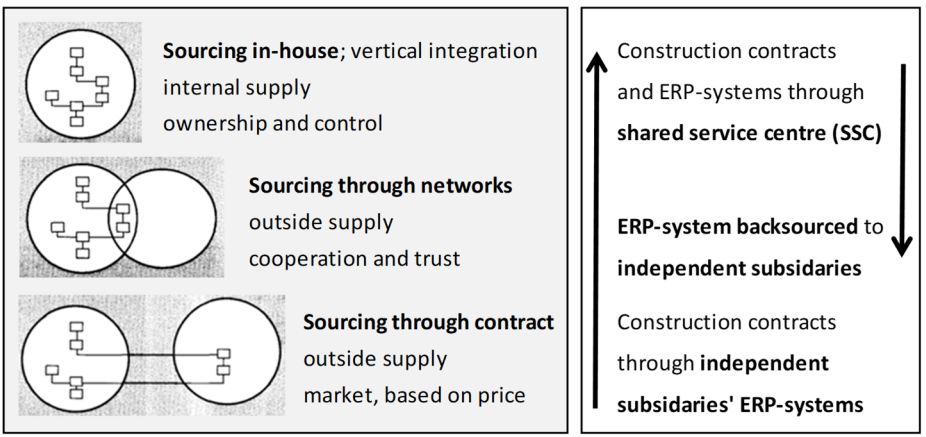

Figure 10.1 Different sourcing arrangements after Jennings (2006: 395) applied to outsourcing of ERP system of Assemblin

Business process outsourcing (BPO) also called 'corporate function unbundling' (Sako, 2006: 505) concerns outsourcing of processes in corporate functions. BPO is a subset of outsourcing that involves contracting of operations and responsibilities of a specific business process. It is categorized into back office outsourcing, which includes internal business functions, such as human resources, or finance and accounting, and front office outsourcing, which includes customer-related services, such as contact center services. BPO is a prominent, but controversial trend, facilitated by advances in information and communication technologies. Instead of outsourcing like 'lift and shift' a transfer of service responsibility like 'transformational' has been introduced as a step in a global strategy that keeps the processes 'client-retained'.[63] The shared service center

[63] Outsource Magazine, July 5, 2013 http://www.outsourcemagazine.co.uk (accessed May 25, 2018).

(SSC) that will be discussed as the Assemblin way of working with BPO, is an illustrating example on how global companies work with independent subsidiaries without having to work with totally external providers.

Organizations have turned to both local and international outsourcing to improve performance (Deng *et al.*, 2013). Corporations, where processes have been duplicated in decentralized structures, could cut costs and improve quality of service, if processes are standardized and centralized. Prioritized skills are process excellence and continuous improvement.[64] It has become just as important as outsourcing of inputs that go into the final product of the company. Outsourcing strategies are often used to streamline the value chain, but functions are said to be "… bundled together in shared services center …", which is an act of re-centralization at the corporate headquarters (Sako, 2006: 505). Shared services seem to provide significant economic benefits and create new competencies (Gospel and Sako, 2010). The SSC could also be kept in-house to exploit economies of scale internally and has doubled over the last decade in multinational corporations (Richter and Brühl, 2017). It could also be contracted out for a period of several years, if the supplier like Adecco in the SunLibrary case could be motivated via a bonus or a management fee. As in the SunLibrary case, the developed SSC added value not merely through cost-cutting, but by developing new competencies that turned the librarian function into a core part of Sun (Hill, 1998; Gospel and Sako, 2010; Richter and Brühl, 2017).

Organizational routines, as the foundation of the work processes, involve coordination among multiple actors (Pentland and Feldman, 2008). It is suggested that knowledge production requires communication across boundaries of existing organizations (Nelson and Winter, 1982; Teece, 1998). The interviewees' descriptions of the outsourcing conditions are assumed to reveal the present organizational and extra-organizational outsourcing behavior. All knowledge comes with a point of view, and the best to do is to be critical and reflexive in the examination of the assumptions (Phillips and Brown, 1993). As discussed in Section 2.6 about validating an interpretation, it is not simply to verify it empirically. A validation is "… an argumentative discipline more comparable to the judicial procedures of legal interpretation." (Ricoeur, 1981: 159) The interpretation must encounter the specific, practical evidence.

[64] The Shared Services and Outsourcing Industry Report EUROPÉ – 2018, published by SSON, https://www.ssoweek.com/landing/market-report-state-of-the-shared-services-outsourcing-industry-europe-2018 (accessed March 22, 2018).

The outsourcing company in this chapter is chosen because it is known and identified by the author of this thesis during the past several years, as an illustration of complex outsourcing and insourcing issues. The qualitative face-to-face open interview is perceived as the expert voice "… to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomenon …" (Kvale, 1983: 174). The former CFO describes the process of developing and managing an enterprise resource planning (ERP) system in independent subsidiaries of a corporate construction group, now, after different reconstructions, known as Assemblin. The summary of the open interview with the former CFO is presented in Section 10.2, translated into English and reviewed by the interviewee to come to common understanding and consensus on the issue. It is the base of the analysis in Sections 10.3 and 10.4 and trusted as "… expertise is based on extensive knowledge" (Simon, 1991: 128).

10.2 Business Process Outsourcing: Assemblin

In 2000 NVS Installation AB, an independent subsidiary of the construction corporation NCC, worked with Heating & Sanitation in the construction industry in both Sweden and Norway. NVS Installation AB had a turnover of SEK 1.8 billion and headquarter in Malmö. In 2002 NVS was sold to the private equity firm Segulah[65] and thereinafter to another private equity firm Triton.[66] In 2008 NVS was next sold to a Dutch listed group IMTECH[67] within construction installations. IMTECH was ten times as big as the NVS Installation AB, which by then had reached a turnover of 3.5 billion SEK and had 2400 employees in 50 locations in Sweden and in Norway and a small business in Finland. IMTECH, listed on the Amsterdam stock exchange, had operations in Germany, England, and Spain, but also on ships and in ports all over the world. However, IMTECH had no operations in Northern Europe. The CEO of IMTECH developed plans for an expansion to the North together with the former CEO of NVS, who had necessary and excellent understanding of the Swedish construction market. IMTECH operated installations in Electrical Engineering, Heating & Sanitation, and Ventilation and acquired in 2010 Närkes Elektriska AB (NEA),

[65] http://segulah.se/ (accessed January 12, 2018).

[66] The Triton funds invest in the development of medium-sized businesses, http://www.triton-partners.com/ (accessed January 12, 2018).

[67] https://en.wikipedia.org/wiki/Royal_Imtech_N.V. (accessed January 12, 2018).

headquartered in Örebro, to g*et al*so a Swedish electrical installation company. NEA had operations similar to NVS in 50 to 60 locations, however, only in Sweden. To also expand into Ventilation, Sydtotal AB, headquartered in Malmö, and with operations in southern Sweden, was bought in 2011. These three companies NVS, NEA and Sydtotal became the Nordic IMTECH business, a holding company with a new CEO and a new CFO.

NEA needed to change the enterprise resource planning (ERP) system,[68] while NVS was satisfied with its old business planning system. NVS had a standard system that was primarily prepared for fixed-price contracts in the construction industry. It worked with fully integrated project accounting and construction project costing and simultaneously used the percentage of completion accounting method of work-in-progress evaluation and the completed-contract method for tax purposes on long-term contracts. All parts, except actual bookkeeping, like customer and supplier ledgers and order receiving were transferred into a modern platform. All parts of the business support system had been refined. It had systems for electronic purchases, a large data warehouse, and all types of reports on salaries, vehicles, sales orders and pricing, as well as contract guarantees and automatic, internal allocation of costs.

The companies in the IMTECH group were recommended to switch their ERP system to 4PS, which was a system built on Microsoft Navision ERP, and further developed in Holland for the installation industry. The CFO of Nordic suggested a change to 4PS even if was not at all known or used in Sweden. Only England had gone live in 4PS. At that time, the quite large Nordic group within Heating & Sanitation and Electrical Engineering in Sweden and Norway changed to 4PS, except for Ventilation and a small business in Finland that decided to wait. It was an extensive undertaking by IMTECH Nordic to map the business processes to prepare for a set-up in 4PS. The finance department of NVS had several people, working almost full time on the project together with the CFO, who also participated in the advisory board meetings.

A new CEO and a new CFO of Nordic were then employed in Stockholm, where the business development and purchase staff had been built; shortly after, also the head office was registered in Stockholm. In this reorganization five independent units were created, three in Sweden, one in Norway, and one in Finland. The Swedish companies changed name to IMTECH Heating & Sanitation, IMTECH Electrical Engineering, and IMTECH Ventilation. All posters and vehicles were

[68] An enterprise resource planning (ERP) system is an integrated management system of business processes, mediated by software and technology.

repainted in the same color and logo. Only one CFO was appointed to the head office in Stockholm, the other CFOs were transformed to business controllers like the controllers working at local and regional offices. The switching to 4PS was still not completed with the processes running in the old ERP system.

The finance department for Heating & Sanitation was still operating in Malmö, but the CFO had quit. However, a few months later the CFO was called back to prepare the financial statement of 2014. As Heating & Sanitation planned to go live in 4PS as of May 1, 2015, the business controller in Stockholm needed help with the reconciliation of the old system to convert it into 4PS. Again, the former CFO, by that time an independent consultant with her own company and other assignments, was hired.

Already in February 2013, IMTECH had problems and stopped the payments; the banks pulled the emergency brake for this highly-indebted Dutch-listed group. This also affected the Swedish Heating & Sanitation that despite good liquidity could not release its money to pay the suppliers. Holland showed big deficits, due to incorrect recognition of the value and depreciation of the construction projects, so after the summer of 2015, the listed group IMTECH was in bankruptcy and the entire management team was ousted. The banks took over the Nordic operation, and formed, as collateral for the loans, a holding company that included the Nordic operations, which later in the year was sold to the private equity firm Triton.

In May 2015, the finance function was centralized to Stockholm as an in-house service center to manage the Swedish operations. When the ERP system turned over to 4PS only new people and consultants, mediated by software and technology, were employed in Stockholm to fulfil the processes for Electrical Engineering and Heating & Sanitation. Everyone at the finance department in Malmö was ousted, because the intention was that Stockholm would manage all units Heating & Sanitation, Ventilation, Electrical Engineering, Nordic, and their various subsidiaries in the new 4PS system. However, the new routines of the new 4PS system did not start to run smoothly with new people, who neither knew the system nor the construction industry, and who had no experience in project management or knowledge about the percentage of completion method, central to the general ledger.

In the autumn, Triton took over as a new owner and employed a former CEO as CEO for Heating & Sanitation, who then requested his own CFO and a separate finance department for Heating & Sanitation, instead of using the shared service center (SSC). After the year-end 2015, the SSC in Stockholm was split up into

separate finance departments, one for Heating & Sanitation and one for Electrical Engineering, while some people took care of Nordic and the consolidated financial statements. Norway and Ventilation were still independent with its own finance and CFO. In the beginning of 2016 the group changed its name to Assemblin as the name of IMTECH had a bad reputation, which had affected the Swedish heating and sanitation business negatively.

The Assemblin group currently consists of three legal units in Sweden, one in Norway and one in Finland. It has headquarters in Stockholm, even if the CEO of Heating & Sanitation and the CEO of Electrical Engineering are both located to Gothenburg. Triton quickly managed to obtain stability in the business by bringing in CEOs, who had worked in the old organization and were trusted and had good reputation in the organization. The SSC in Stockholm was 'outsourced' back to in-house.[69] It had to a large part used employment agencies and consisted of temporary people, consultants, and a few employees and was now divided also physically at different floors of the building in Stockholm.

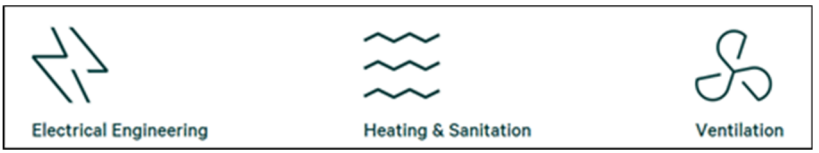

Figure 10.2 Services of Assemblin

Triton was an active owner and appointed the same Chairman for the Group, for the board of directors of Electrical Engineering, and for the board of directors of Heating & Sanitation; the two companies that accounted for more than half of the Group. The board of directors of the Heating & Sanitation doubted the correctness of the financial reports so the Chairman turned to the former CFO of NVS for a complete description of how overheads were allocated to projects in full cost allocation.

As the board took responsibility in getting a financial statement with quality, the CFO got an interim assignment to control the work with the financial statements of 2016, using the new people of the finance department of Assemblin that temporarily had no CEO, only people from IT and Information.

[69] Interview with the former CFO, Lund, November 15, 2017.

The Assemblin group at that time had annual sales of 8 billion SEK and 5500 employees. The new CEO began in June and one of the first things he did was to hire a new CFO. According to figures from 2015, Assemblin is the second biggest group in the industry; Bravida is the largest in Sweden, and Caverion the third. The former CFO is working in her consulting firm as an independent advisor to the current leadership of Assemblin, mainly remotely, but also participating at management meetings.[70]

The reorganization, the 'backsourcing', resulted in closing of the two finance departments that worked for the two largest units Electrical Engineering and Heating & Sanitation. Ventilation retained to the old system. The operation in Norway changed back to the old NVS system, a simpler set-up in many routines, in a fairly intact finance department with the same employees. On the other hand, the finance departments of Electrical Engineering and Heating & Sanitation have only new employees; none of them had worked in the project groups and learnt how to set up the flow and determine the code string. The business operations are very similar, but the ERP system is set up in an impractical way. There is another Heating & Sanitation firm in Sweden that has set up a cleaner and simpler version of the system and it seems to work superbly. So probably, it is not the system itself, but the set-up that makes it difficult to carry out. The problem is that all systems were switched – not only the financial system, which is 4PS – but also the purchasing system, with scanned invoices certified electronically, which is a separate system connected to 4PS.

The former CFO also worked as a consultant in a project group to study a simpler set-up for Electrical Engineering and Heating & Sanitation.[71] Another issue is that the modules of 4PS were not used initially because they were said not to be good enough, so separate subsystems were chosen to always get the best sub-systems. However, there were difficulties in integrating them, so it would probably have been equally good to drive the system in the modules of 4PS from the beginning, "Now they have picked the raisins out of the outsourcing pie."[72] Everyone working in the finance department of Heating & Sanitation is fully employed and even Electrical Engineering has started to replace temporary assistants. The former CFO ended with a reflection: "It might surprise how it is possible to mess up

[70] Interview with the former CFO, Lund, November 15, 2017.

[71] Ibid.

[72] Ibid.

something that has worked for nearly 100 years – NVS and NEA are companies that started in the early 1900's."[73]

10.3 Interpretation of Business Process Outsourcing

The interpretation is about outsourcing issues and especially business process outsourcing (BPO) hiring individuals or companies, internationally or domestically, to manage various business activities. It is based on the description of Assemblin, summarized and translated in English in Section 10.2, given by the former CFO of NVS in Malmö, who has 17 years of experience of companies in the construction industry.

Business process outsourcing (BPO) is about the unbundling of corporate functions like the entire resource planning (ERP) system that allows firms to maintain growth goals and avoid bottlenecks. Contracting out the accounting function seems hard to justify because it is commonly believed that it must be done inside of the business. On the other hand:

> Corporate restructuring efforts … outsource back-office functions such as human resource, and finance and accounting that are resource intensive, and have little impact on competitive advantage. (Gerbl *et al.*, 2015: 507)

BPO is about design and administration of new processes, having sometimes better abilities to improve service and knowledge processes in the global organization than can be found inside the local organization (Aron and Singh, 2005; Narayanan *et al.*, 2011; Kjellström, 2017). In the IMTECH group the option to implement an ERP system called 4PS was a management decision of each independent subsidiary. The ERP is a system built up by organizational routines to connect both technological knowledge and the knowing of the employees. It provides the structure around which control processes of regulation are built (Collins, 1982; Dent, 1990; Anthony and Govindarajan, 1998; Das and Teng, 2001). The 4PS system is as a management control system concerned with coordination, resource allocation, motivation, and performance measurement with rules and organizational routines that coordinate actions and direct employee behavior (Burns and Scapens, 2000; Lukka, 2007). The control processes at the strategic, management, and operational levels are complex and include

[73] Interview with the former CFO, Lund, November 15, 2017.

coordination between autonomous, independent parties. These processes differ from the traditional hierarchical top-down control (Nixon and Burns, 2005; Van der Meer-Kooistra and Scapens, 2008).

In a period of mergers like the expansion of IMTECH with the acquisition strategy of gathering Heating & Sanitation, Electrical Engineering and Ventilation in the same Nordic group, there seems to have been a preference for in-house provision, also found by Jennings (1996) in his study of another building society. In the IMTECH decentralized structure, each company had its CFO and there were regional and local business controllers. Controllers with the tasks of evaluating managerial and organizational performance work with processes across operations and performance measurement systems (Kaplan and Norton, 1992, 1996a, 1996b; Horngren *et al.*, 1999).

Implying an ERP system at a shared service center (SSC) in Stockholm was a part of a wider corporate restructuring of the Nordic Group after the bankruptcy of IMTECH The renewal was aimed at improving return on assets as suggested in the literature by Sako(2006). It could also be considered 'path breaking', where a major organizational crisis legitimizes changes and facilitated the adoption of new centralized systems in the organization (Law, 2018). Eisenhardt and Martin (2000) explain that the ability to transfer processes is critical for the ability to recombine resources within corporations and to perform support routines internally through shared service centers (SSCs). Considering the firm, a bundle of assets and capabilities to create superior performance, the SSC is a way to reorganize processes and routines to exploit resources in an improved manner (Barney, 1991; Richter and Brühl, 2017).

The SSCs have been on the rise in recent years due to their potential to reduce costs, standardize processes, and improve quality of service through centralization of the ERP systems. There is a broad, albeit novel, stream of research that tries to uncover the complexity of all interrelations and influences of the way SSCs perform (Richter and Brühl, 2017). A SSC strategy is intended to provide services and new competencies to internal or external clients, even if the required volume for exploiting potential economies of scale may be difficult to achieve (Gospel and Sako, 2010; Schulz and Brenner, 2010). However, employing temporary people and consultants in more flexible and during less hours is also a way of saving costs in the way Assemblin centralized the back-office functions to the SSC. SSCs are often kept in-house in global corporations (Sako, 2006; Gospel and Sako, 2010).

SSCs add value by turning internal business unit support routines into a central SSC view (Gospel and Sako, 2010). Scholars refer to SSCs as 'internal

outsourcing'; it is also known as insourcing (Veltri *et al.*, 2008), in-house services, business services, or staff services (Zeynep and Masini, 2008). The SSC is defined as a partly autonomous business unit that operates consolidated support routines (Schulz and Brenner, 2010). The 4PS system centralized in Stockholm was intended to provide services to several companies in the Assemblin Group.

The SSC is created within the boundaries of Assemblin but across the boundaries of the individual subsidiaries because of a consolidation of previously distributed ERP systems. It means that "… a further challenge involves redesigning and standardizing processes that are dispersed across different business units and locations." (McIvor *et al.*, 2011: 449) Some companies experience technical difficulties, like over-standardization of systems and processes, when they bring formerly decentralized units together in a SSC (Davis, 2005; Su *et al.*, 2009). The suggestion to centralize the finance functions in the SSC in Stockholm could very well explain an increase in complexity that tends to increase the need to communicate (Carlile, 2002, 2004).

> Different strategic moves are adopted in the form of serial restructuring and this can include downsizing, outsourcing, offshoring, work intensification and lay-offs – variations of which can be found in shared services (Howcroft and Richardson, 2012: 114).[74]

In Assemblin, the centralization resulted in that the back-office work was merged and relocated into a separate cost center in Stockholm. Outsourcing of ERP systems is often connected to systems related to new technology. The new 4PS system was the driver in the Assemblin Group.

> … the commodification of the labour process as tasks are fragmented, quantified and traded in the global sourcing of services, allowing work to be lifted out of traditional organizational structures and placed elsewhere, or outsourced to other service providers … (Howcroft and Richardson, 2012: 111).

The CFO Nordic started to map the business processes to prepare for a set-up in 4PS for Nordic, Heating & Sanitation, and Electrical Engineering under only one CFO, appointed to the head office in Stockholm. Everyone at the finance department in Malmö was ousted, because the intention was that Stockholm

[74] *Offshoring* means getting work done in a different country. Offshoring is often criticized for transferring jobs to other countries, including geopolitical risk, language differences and poor communication etc. (Aron and Singh, 2005; Oshri *et al.*, 2009).

would manage the finance function for the various subsidiaries in the new 4PS system. It should be reminded that the companies succeeded in shifting to 4PS, even if it created problems with just new people employed to fulfil the processes.

Involvement of multiple organizational members introduces diversity. There are known difficulties with coordination across boundaries in cross-disciplinary interaction as participants in different routines may have conflicting motivations that complicate the change (Kellogg *et al.*, 2006; LeBaron *et al.*, 2016). Knowing that the practice and history of the individual subsidiaries of Assemblin were different, one could assume that the changes were 'path-dependent' and not easily facilitated by the cumulative work processes of everyday organizational life as claimed by Nelson and Winter (1982).

An organizational routine is developed on stability of behavior and expectations that enables its functioning. In Section 3.3 the generative system (Pentland and Feldman, 2005: 795) describes how a routine can be a source also of change. A organizational routine embodies[75] the 'ostensive' aspects that guide the action, the 'performative' aspects that bring the routine to life and the 'artifacts' that explain how multiple actors of a routine could perform in new ways, generate variations and exceptions of the routine (Feldman and Pentland, 2003; Feldman and Rafaeli, 2003; Pentland and Feldman, 2005). Analyzing the SSC in Stockholm, the artifacts are recognized as the ERP system that was transferred into a modern platform, where all parts had to be refined. The ostensive aspects are the CFOs and the system seen from the CFO's point of view. The performative aspects are "… actual performances by specific people, at specific times, in specific places …" (Pentland and Feldman, 2005: 795).

The old ERP systems of the different companies, the artifacts, were in many parts changed to the new integrated ERP system 4PS. Outsourcing often translates into the latest technology providing high quality of financial information for better business decisions. However, the qualified total ways of system functioning, the ostensive aspects, were neglected when the former CFOs were exchanged of the same time as software and technology, i.e., the artifacts. The performative aspects, interpreted as the knowledge between co-workers regarding tacit knowing, were neglected, because tacit knowing requires the continued participation of a knower. The intangible nature of the ERP service makes outsourcing problematic. When the centralized finance functions were to turn over to 4PS, only consultants or new part-time people with no experience were employed at the head office in Stockholm. Sometimes standardization is used to open the possibilities to

[75] See Figure 3.1 The generative system by Pentland and Feldman (2005) in Section 3.3.

outsource some of the work to a cheaper third-party provider if the firm manage to turn highly skilled back office activities into routine service work (Howcroft and Richardson, 2012). However, the context of continuous restructuring and the ongoing back-office standardization at the SSC in Stockholm still needed experienced people. To manage the change, the ostensive aspect, the former CFO from Malmö was called to Stockholm to help with the reconciliation of the old system and its conversion to 4PS.

Following the evolutionary theory of the firm, knowledge lays primarily in the organizing principles, by which individual as well as functional expertise is coordinated to enhance the transfer and communication of new skills and learning (Zander and Kogut, 1995; Davenport and Prusak, 1998). Knowledge is assumed stored in the memory of the different ERP systems of the subsidiaries of Assemblin. The memory of organizational routines links experience to inarticulate individual skills and balance interactions by which information is acquired and knowledge created (Hedberg, 1981). Knowledge often becomes embedded "… not only in documents or repositories but also in organizational routines, processes, practices, and norms …" (Davenport and Prusak, 1998: 5). The 4PS, the pipeline and storage system, serves as the organizational memory of Assemblin. However, much of the memory of organizations is stored in human heads and as only a little of it is held in ERP system and routines the turnover of personnel is a great enemy to the organizational memory (Simon, 1991). The memory is created and articulated between individuals in a social context (Argyris and Schön, 1996) like the 'communities-of-practice' (Brown and Duguid, 1991; Lave and Wenger, 1991; Dittrich *et al.*, 2016). It made the project group that was working with the development of the 4PS system in Assemblin a crucial factor.

The organizational routines employed are critical to learning, flexibility, and adaptation. The centralized SSC in Stockholm becomes critical to transfer of knowledge and learning between the different subsidiaries. The organizational routines are the foundation of work processes that coordinate actors and performance as discussed in Chapter 3 on organizational routines (Nelson and Winter, 1982). "Great many routines are the product of explicit attempts to design efficient, effective work practices."(Pentland and Feldman, 2008: 235)

The firm's 'repertoire of actions' is driven by relatively stable processes that relate to organizational routines (Cyert and March, 1963; March, 1981; Nelson and Winter, 1982). Changes that escape the control system are understood as not managing to keep things predictable, reliable, and under control. Control lapses (Nelson and Winter, 1982) have effect on work routines that get removed from the accountability of the organization (Elharidy *et al.*, 2013).

The system of accountability secures control over action. It coordinates knowledge and communicates social controls and core-values to employees. The organizational routines of an ERP system serve as memory, accountability, and predictability and make employees focus on certain information and knowledge and not on others.

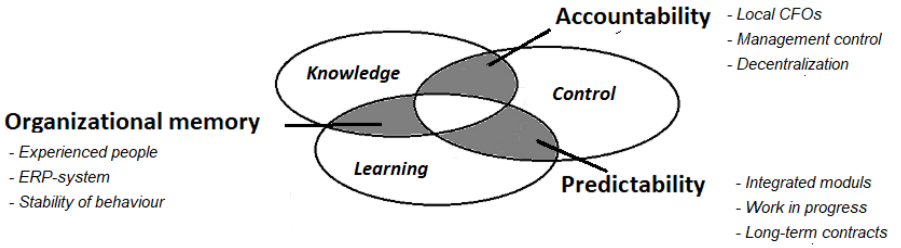

Figure 10.3 Aspects and empirical data of organizational routines of Assemblin (see also Sections 1.4 and 1.6)

The different companies in the Assemblin group are assumed to have difficulties keeping up with lost interactions of the organizational routines outsourced through the ERP system to a centralized SSC (Willcocks *et al.*, 2004; Blumenberg *et al.*, 2009; Raiborn *et al.*, 2009; Yakhlef, 2009). Centralizing the finance functions to the SSC in Stockholm outside the boundaries of the separate subsidiaries brought complexity into the organization, and resulted in changes in memory and accountability, but also in lost predictability. Organizational routines that carry knowledge and control get transformed or broken, when a function like the ERP system is moved from the local companies to the SSC.

The Assemblin case has the potential to push the hermeneutical interpretation of memory, accountability, and predictability into a second discourse, where the 'hermeneutics of suspicion' focuses on absent organizational routines to present at least one likely interpretation of the outsourced routines. Routines out of context indicate a loss, associated with changes that are not being predicted or reasonably expected and that makes it difficult to preserve underlying partially inarticulate knowledge. The organization must cope with the drastic effects of a finite loss of memory, accountability, and predictability indicated in Figure 10.4 as amnesia, discharge, and unforeseeability, i.e., inability to foresee. Ricoeur's hermeneutics of suspicion and the critical 'is-not' discussions push the interpretation to its limit by rejecting the context of the single subsidiaries. Outsourcing the local back offices to the SSC is a matter of negotiating

perspectives and trade-offs between the SSC and the local subsidiary. In setting and monitoring performance targets, the Assemblin was supposed to rely on the knowledge agenda of the planning guidelines of the 4PS that still were not even fully employed in the organization. The suspicion is that Assemblin SSC did not manage to take care of the presumed loss of memory of the local organizations and the change of accountability, which resulted in a loss of predictability (Elharidy *et al.*, 2013). The board felt insecure about the correctness of the financial figures, so in the process of accountability, the former CFO was called to take responsibility of the quality of the financial statement.

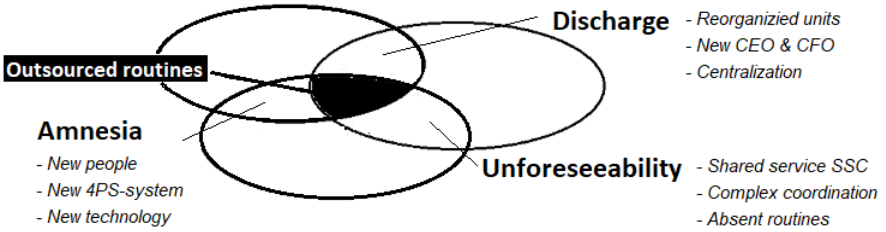

Figure 10.4 Practical consequences in Assemblin of outsourced organizational routine (see also Section 1.6)

When organizational routines are cut off, interfaces between the outsourced activities and other operations and technology are affected (Flamholz *et al.*, 1985; Barthélemy, 2003).

An enterprise resource planning system (ERP) tries to make tacit knowing transferable into formal, systematic language via reports and databases. An ERP system refers to the ostensive aspect of the organizational routines, which best cope with codified and explicit knowledge. The ERP system is assumed a relational structure and shared coding scheme that reproduce capabilities and enhance communication (Zander and Kogut, 1995). Activities traditionally handled by internal staff and resources were moved outside the individual subsidiary and resulted in lost interactions. This contradicts the idea that all members must continue to 'know their jobs' because organizations remember by employing the routines (Nelson and Winter, 1982). Normally, an organization has no trouble conforming to the routines because control processes based on formal, information-based routines and procedures tend to resist mutations, highlighting dependence and exchange between different levels (Simons, 1995; Moran and Ghoshal, 1996; Merchant and Otley, 2007). Problems of the formal

ERP system can be smoothed by the informal controls emanating from values and norms in the organization connected to the outcome performance of the controller (Otley, 1980; Itami, 1987; Lukka, 2007). However, to handle outsourcing of tacit knowing and skills at the individual level, connected to the ERP practice at the individual subsidiaries, the participation of a 'knower' is required (Polanyi, 1967). The interaction between a routine's implementer and the routine itself is important (Feldman, 2000). When former employees were changed into temporary people with no knowledge of the constructions industry, or experience in project calculation, the new CFO in Stockholm obviously had problem with organizational amnesia.

It seems that there were enough differing experiences and world views in Assemblin that created boundaries as demarcation lines and made communication between the central office and the regional businesses difficult. Even if SSC is different from outsourcing, because the centralized party that provides the service is not necessarily external, it is assumed to change the firm's capacity to handle routines outside boundaries that was previously internal.

In Assemblin, the negotiation to establish boundary practice and approach boundary crossing with joint structures and processes seemed to have failed (Kellogg *et al.*, 2006). In centralizing the accountability system, nobody was able to serve as a link between internal and external systems with access to the necessary local information and tacit knowing (Macdonald, 1995: 564; Davenport and Prusak, 1998). The organization came to suffer from amnesia, when the SSC did not become a boundary object that could transfer, translate, or transform[76] knowledge.

When the CFOs and the business controllers in the different subsidiaries were removed and could not be boundary spanners (Star 1989; Carlile, 2004), the management accounting function as a binding structure that preserves the organizational unity was discharged. In communicating core-values to empower the employees and stimulate learning social controls like the belief and boundary systems are important to share values and norms between the different subsidiaries (Cooper, 1990; Macintosh and Scapens, 1991; Simons, 1995; Das and Teng, 1998; Nixon and Burns, 2005; Ferreira and Otley, 2009).

Outsourcing certain functions built up by organizational routines means that a company can lose the knowing of its employees and control over business processes, technologies and work standards (Raiborn *et al.*, 2009; Feldman and

[76] According to the framework of Carlile (2004: 558) shown in Figure 7.2 in Section 7.6.

Orlikowski, 2011). This happened at NVS, when both the finance personnel and the CFO were ousted. A firm's difficulties in handling organizational routines out of context and outside the boundary are discussed as 'phantom limbs pain'. In Assemblin it is a serious sign of phantom limbs pain, when the board of directors for the two companies that accounted for more than half of the Assemblin Group had difficulties in trusting the correctness of the financial reports. The Assemblin group had, at that time, annual sales of 8 billion SEK and 5500 employees. Triton, the new, active owner and the board responsible for 'a financial statement with quality' had to turn to the former CFO of NVS in Malmö to get a complete description of cost allocation and thereinafter give her an interim assignment to work with the financial statements of 2016.

Some routines are attributable to local or regional forces that shape the firm's capabilities, as indicated by the CFO of NVS in Malmö. The individual manager or the team that was the center of accountability (Ezzamel *et al.*, 1997) seems to have been transformed in Assemblin due to the SSC. The importance of teams and networks was shown in the SSC, where learning by doing jobs more efficiently or drawing on what others already know was not taken charge of. Controls of the interactive processes are important for "… capitalizing on the knowledge of others …" (Ford *et al.*, 1998: 240; Augier and Teece, 2007).

> They try to learn from each other and to master the shared assumptions, the complex rules, the normative codes, the underlying institutional logic that governs their world. They thus try to control the construction of the everyday reality. (Jackall, 1988: 18)

Interorganizational relationships provide important perspectives on the transfer of knowledge embedded in practices or routines (Miner *et al.*, 1990; Argote and Miron-Spector, 2011). However, it is necessary to include "the dynamic interplay over time" of learning interactions (Larsson *et al.*, 1998: 301). Also, the tacit underlying parts that uphold the work practices require personal participation, which was not taken care of until Triton took over and let the finance functions be backsourced to the separate companies. The 'out of context' aspect of accountability referred to as discharge indicates a release, a freeing from obligations that change the functioning. As a result, a former CEO was appointed CEO for Heating & Sanitation and he immediately requested a separate CFO and a separate finance office for the business, to be independent of the head-office in Stockholm. The ERP system was regained through insourcing back to the subsidiaries at Göteborg (Yakhlef, 2002; Veltri *et al.*, 2008; Sundquist *et al.*, 2015; Law, 2018). Focusing on the management of day-to-day operations is a way of

keeping accountability, i.e., knowledge and control. According to the resource-based view, an organization's capabilities, like the financial functions, are important for the performance (Teece *et al.,* 1997). Also predictability that involves control and the learning aspects is of importance.

Would old and new routines be able to function together? (Feldman, 2000; Feldman and Rafaeli, 2002; Feldman and Pentland, 2003) The trend of backsourcing (Veltri *et al*., 2008; Nagpal, 2015) in Assemblin shows how transformed or broken organizational routines can be recuperated. It is also obvious that the tacit underlying parts that uphold the work practices require personal participation. The important source of change was not just the performative aspects being "… actual performances by specific people, at specific times, in specific places …" (Pentland and Feldman, 2005: 795), but also the ostensive aspects, the CFO and the CFO's point of view. It shows how work practices and personal participation uphold the organizational routines in outsourcing situations.

10.4 Advancing the Sourcing Discussions

Organizational routines are assumed to hide explanations on coping with different aspects of outsourcing and backsourcing (Veltri *et al*., 2008; Nagpal, 2015). The Assemblin case gives a rather coherent view of a firm's repertoire of actions. However, according to the study of McIvor (2008: 30) on how evaluation of process outsourcing is done, it seems like no real evaluation was done in Assemblin about the impact of the financial processes upon capabilities in other areas. There are also relationships between the resources and the capabilities of the different companies in the Assemblin group that could have been of importance to evaluate. These relations were based on a long and complex learning process through many interactions of people within and between the companies. Such 'path-dependent' routines must have been directly or indirectly responsible for the quality of the shared service center (SSC) (McIvor, 2008). Furthermore, the importance of employees as critical sources of knowing has been learnt from the Assemblin SSC and that both structural and relational attributes must be discussed to understand path-dependence.

Organizational routines are considered highly complex and show variations that indicate underlying phenomena and dynamics (Pentland and Feldman, 2005: 793).

> The point emphasized by evolutionary theory is that a firm with an established routine possesses resource on which it can draw very helpfully in the difficult task of attempting to apply that routine on a larger scale (Nelson and Winter, 1982: 119)

The existing routine serves as a 'template' for the new one, which makes it possible to copy a functioning system rather precisely. "Under this pressure, a business firm may be expected to initiate some sort of search for a new routine that would be viable in the prevailing environment." (Nelson and Winter, 1982: 122) In Assemblin new routines in form of the 4PS system were initiated, under the pressure that a SSC had to be developed in Stockholm. It could be a problem if complex skills are involved, like in the 4PS. Employees, who are going to work in a new system, must be trained, when there are large tacit components, acquired through years of experience. This is well described by the former CFO about the ERP system.

> It worked with fully integrated project accounting and construction project costing and simultaneously used the percentage of completion accounting method of work-in-progress evaluation and the completed-contract method for tax purposes on long-term contracts.[77]

Outsourcing is seen as a means of achieving performance improvements to get access to the latest and most effective technology, methodologies, practices (Lacity and Willcocks, 1995; Quinn, 1999, 2000; McIvor, 2008; Raiborn *et al.*, 2009; Ford *et al.*, 2011). Organizational routines are thereby assumed to hide new explanations on how to cope with different aspects of outsourcing and insourcing. On the other hand, outsourcing is often done "… without fully understanding the nature of the process and linkages with other parts of the business." (McIvor, 2008: 33)

The initial SunLibrary case shows how the linkage between the Sun and SunLibrary were not fully accepted until after the outsourcing to Adecco when it became difficult to get relevant key services outside the boundaries of Sun (Hill, 1998). The interpretation in Section 8.4 shows different consequences of discharge, amnesia, and unforeseeability, when SunLibrary is removed and being ignored as a team member and a business unit partner by the Sun intranet. The

[77] Interview with the former CFO, Lund November 15, 2017; from Section 10.2.

backsourcing (Nagpal, 2015) of the library service to Sun is finally the chosen solution.

The interpretation of Assemblin also shows how the SSC with complex and quite specific processes was split up into separate finance departments when the board of directors for Heating & Sanitation and Electrical Engineering, two companies that accounted for more than half of the Assemblin turnover did not trust the financial reports from the head-office in Stockholm. It must be 'path breaking' that occurs after major organizational crisis that legitimized changes and facilitated the adoption of a new decentralized system (Law, 2018). The chosen solution was backsourcing the financial services to the local companies. The main reasons for backsourcing are that firms experienced outsourcing failure, costlier than expected; the decision to backsource is a recalling of outsource activities back in-house (Law, 2018).

11 Conclusions and Implications

This chapter, concluding the hermeneutical interpretation, highlights the importance of understanding organizational routines in outsourcing and insourcing situations. In outsourcing, organizational routines are removed and the organization is left with lost routine interactions that could diminish the effectiveness of remaining activity systems. In insourcing the organization must prepare for the insertion of organizational routines. The theoretical analysis is finally compared with the three cases to result in contributions to the organizational routine research and in some practical implications for the firm's repertoire of outsourcing action.

11.1 Comparisons and Conclusions

Outsourcing is assumed to change the firm's capacity to handle organizational routines off context and outside boundary of the organization leading to a potential loss of memory, accountability, and predictability. To be able to work with these intersections of the hypothesis formation, it was necessary to work with all three aspects of knowledge, control, and learning and the corresponding theoretical perspectives of knowledge management, management control, and organizational learning. This study explains how organizational routines can give a coherent view of the firm's repertoire of actions in outsourcing situations. All three aspects of knowledge, control and learning are significant for the consequences of outsourcing that involve new concepts and changes in organizational structure and boundaries. Knowledge is cut off from the organization's established control system (Kjellström, 2009). When exposed to outsourcing, the organization eventually is left with 'phantom limbs pain', because of lost interactions that diminish the effectiveness of the remaining activity system.

Earlier research has focused on organizations' stabilizing processes and structural properties (Cohen and Bacdayan, 1996; Becker, 2004; Felin and Foss, 2004), but here the focus is on shifts in organizational routines, when challenged by structural changes, like outsourcing and insourcing, to show how lessons of experience are

accumulated within organizational routines and how they are recorded and shared in the organization. When a function, a process, or an activity built up by organizational routines is outsourced, organizational routines that carry knowledge and control, and are the base for learning and change, get transformed or broken. Coordination and communication of what happens outside the boundary of the organization in time and distance is assumed difficult for management to control, because control over outside organizations is minimal. Distance also means hierarchical distance and different perspectives (Roberts, 1996; Kjellström, 2017).

Outsourcing means boundary crossing and is therefore a matter of negotiating between the inside and the outside perspectives of the organization. When organizational routines of an outsourced function are cut off, the question is whether the organization still is in control of knowledge deployment and learning of the firm.

The 'is-like' perspective from inside the organization is questioned by outsourcing and the inside perspectives is put to its limit. When organizational routines are cut off due to outsourcing of activities, the interfaces between the outsourced activity and other operations and technology are affected. Through the 'is-not' element in Ricoeur's critical hermeneutics the 'is-like' interpretation of memory, accountability, and predictability is pushed to its limits by rejecting the context of the organization. The 'is-not' intersections are the basis for the interpretation of how an organization that has outsourced routines must cope with amnesia, i.e., cut-off organizational memory, discharge, i.e., cut-off accountability, and unforeseeability, i.e., cut-off predictability.

Organizational routines and their tacit underlying parts, which uphold work practices in an organization, will be further discussed in dimensions important for the comparisons between the outsourced activities in the three illustrations of SunLibrary, Sandvik Crushing and Screening, and Assemblin.

11.1.1 Comparison of three cases

The three cases SunLibrary, Sandvik Crushing and Screening, and Assemblin are first specified according to *type of firm* and *outsourcing perspective*, as indicated in Figure 11.1. Through the previous chapters, the SunLibrary case has been used to illustrate the complexity related to organizational routines, structure, and technology (Feldman, 2000; Labatut, 2012). SunLibrary is described in the article by Hill (1998) as a library function that is already outsourced to the subcontractor

Adecco. SunLibrary is the outsourced function while the other two cases, Sandvik Crushing and Screening and Assemblin, are discussed as outsourcing firms from the buyer perspective.

According to the *scope of outsourcing interaction* SunLibrary is outsourced from Sun Microsystems Inc. to the host company Adecco and then backsourced to Sun.

Sandvik Crushing and Screening uses traditional outsourcing with focus on quality, delivery, cost, and volume flexibility. Here outsourcing is about how high quality and uncertain volumes must be adjusted and developed in cooperation with hundreds of subcontractors. Boundaries between the companies involved represent different worldviews and require negotiation. The task of the sourcing management of Sandvik Crushing and Screening in Svedala is to achieve improvements in performance of outsourcing and flexibility. Routines, formed around technological complementarities, are treated like a development project, where knowledge transfer and learning are of outmost importance, as described in Sections 9.2 and 9.3.

In Assemblin, described in Section 10.2, outsourcing is focused on business process outsourcing (BPO), where the ERP systems were outsourced from the independent subsidiaries to a shared service center (SSC) in Stockholm. The management of Assemblin dealt with resource dependencies to achieve efficiency in coordinating knowledge and control of the independent subsidiaries. The organizational routines that were transformed and lost in the SSC were regained when the ERP systems were insourced again (backsourced) to the separate subsidiaries.

The *narrator* in each case is a manager with both strategic and daily involvement in the outsourcing situation. The new responsible librarian at SunLibrary Cynthia Hill, employed by Adecco after the outsourcing from Sun, describes how the outsourcing and backsourcing process develops. In Sandvik Crushing and Screening the sourcing manager and the former CEO tell about the outsourcing policy and implementation. In Assemblin the former CFO, at present working as consultant, is the narrator.

Dimension	SunLibrary Chapters 1-8	Sandvik C&S Chapter 9	Assemblin Chapter 10
Type of firm	Subcontractor	Outsourcing firm	
Perspective	Outsourced function	Buyer	
Scope	Backsourcing	Outsourcing	Backsourcing
Narrator	Librarian Manager	Sourcing Manager	Former CFO
Transfer between parties	Procedures, techniques, skills, judgements, tacit knowing		
Routines	Intranet datasystem	Measurement system	ERP-system
Dominating routine aspects	Artifacts	Performative	Ostensiv
Important coordinator	Organizational memory The librarian repertoire	Professional reference groups	The ERP system CFOs' point of view
Context	Missing key services	Quality and volume sensitivity	Cost calculation and consolidation
Boundary position	Outside	Inside Consultants	
Boundary spanning	Denied access Librarian experience	Negotiations, communities of practice, cross functional boundary works	
Consequences	Affected interfaces and coordination		
Performance increase	Increased efficiency Business improvement	Flexibility Quality	Reliability Control problems

Figure 11.1 Overview and comparison of the three outsourcing cases Sun Library, Sandvik Crushing and Screening, and Assemblin

As further indicated in Figure 11.1, the main *transfer between parties* is connected to techniques and procedures of rather complex routine systems of information, measurement, or control. In all three cases, transfer between the parties in the outsourcing process seems to involve transfer of technology, management procedures, as well as skills and judgement in different areas of knowledge, where staff and tacit knowing are vital.

The *organizational routines* are here connected to different information systems of the organization like intranet, measurement system, and ERP system.

In these organizational routines, the *dominating routine aspects* are different, even if all the aspects like artifacts, performative, and ostensive aspects[78] according to the generative system of Pentland and Feldman (2005: 795) are present in each case. In SunLibrary, artifacts are the dominant aspects of the routine, in form of a contract and legal arrangements. Information technology and the denied intranet access hindered the performative aspects of the routine to develop. Artifacts like the management plan of the contract finally decided the destiny of the library and assisted the librarian in bringing back the research and literature searching functions that underpin business development.

In Sandvik Crushing and Screening the performative aspects are dominating, as it is said that the biggest challenge is the transfer of many years of experience to hundreds of vendors. Experiences that correspond to specific actions by specific people, at specific times, are of importance for the delivery of quality; each delivery is of equal importance and dominates over artifacts and the ostensive aspects.

In Assemblin, it is not the ERP system per se, not the individual employee, but the ostensive aspects that are the dominant aspects, in the form of the functioning experience of the different CFOs on how the ERP systems of the different subsidiaries work. When formerly decentralized ERP system knowledge was outsourced, it led to consequences of lost predictability. It affected the performance in form of increased complexity and control problems concerning the construction projects of the different subsidiaries.

Organizational routines are the *important coordinators* of the firm's activities and memory. They are described as the major outsourcing parts of importance for each company. The organizational memory serves as an important structure for SunLibrary's activities, while the organizational routines of the professional groups of Sandvik and the ERP system of Assemblin are the most important coordinators for each firm's activity.

The *boundary spanning* is connected to the *boundary position*. Being outside the boundaries, resulted in SunLibrary not having full access to the intranet of Sun. SunLibrary staff could therefore not function as boundary spanners because of the regulations for outsourced employees. The focus on missing key services in SunLibrary shows the outside position, where access to knowledge is denied. This gap is discovered thanks to the librarian's experience, based on a learned repertoire of routines. In the other two cases, Sandvik Crushing and Screening and Assemblin, the boundary position is inside the organization. The boundary

[78] See also Figure 3.1 in Section 3.3.

spanning is strengthened with boundary spanning done by consultants; initiated from the sourcing management of Sandvik Crushing and Screening, and in Assemblin from the independent subsidiaries. Here, tacit knowing, skills, and judgement that require personal participation are transferred between the parties in outsourcing to influence the interaction that must take place within and between organizations. In Sandvik Crushing and Screening, the boundary spanning role of the sourcing manager and the cross-functional expert groups are shown necessary to adapt to the environmental contingencies. Important boundary spanning took place with consultants especially in Assemblin that had to cope with new staff that did not possess the necessary tacit knowing. Boundary spanning is achieved in Sandvik Crushing and Screening through learning schools, support teams, and consultants and in Assemblin through negotiations and through the SSC. Cross-functional boundary works can replicate existing organizational routines in new organizational settings, which seem to have best succeeded in the Sandvik Crushing and Screening version.

The *consequences of outsourcing* in all three cases could be explained as affecting the interfaces and the coordination of organizational routines that disturb the strategic and operational capacity; in SunLibrary as knowledge quality, in Sandvik Crushing and Screening as product quality, and in Assemblin as reliability. The problem in SunLibrary was to keep up with the transfer of qualified research data. When many heterogeneous firms must learn to meet requirements on long term like in Sandvik Crushing and Screening, quality measurements and volume sensitivity are the main reasons to search for flexibility to be able to keep the same subcontractor. Interfaces are heavily affected if subcontractors must be replaced, especially when it is outsourcing of productions parts, where few routines are 'stand-alone' routines. In Assemblin the different subsidiaries lost both memory and employees capable of keeping up with accountability and predictability to be found in the organizational routines of the enterprise resource planning (ERP) system. In Assemblin the final backsourcing is said to have resolved the consequences of lost reliability. Not until the return of the ERP system and a CFO to the local level of a subsidiary in Gothenburg, the consequences of the SSC in Stockholm were reset. These consequences are further discussed as amnesia, discharge, and unforeseeability illustrated in Figure 11.3 in Section 11.1.3.

However, resolving the outsourcing problems lead to *increased performance* in all three cases, which will be discussed in the next section. New administrative routines, developed by internal expertise staff of Adecco, managed to bridge the gap as system integrators of SunLibrary. The standard processes were efficiently managed, and old and new routines functioned together, which opened for

performance improvement and development in certain areas of business. In solving coordination, Sandvik Crushing and Screening reached flexibility and quality, and finally Assemblin regained control and reliability with the ERP system backsourced to the subsidiaries.

11.1.2 Comparison of three intersections

This comparison deals with the intersection between the aspects of knowledge and learning understood as organizational memory, the intersection between knowledge and control understood as accountability, and the intersection between control and learning as predictability. To reach three intersections in the second hermeneutic, all the three aspects of knowledge, control and learning were elaborated based on each of the three theoretical perspectives; knowledge management elaborated in Chapter 4, management control in Chapter 5, and organizational learning in Chapter 6.

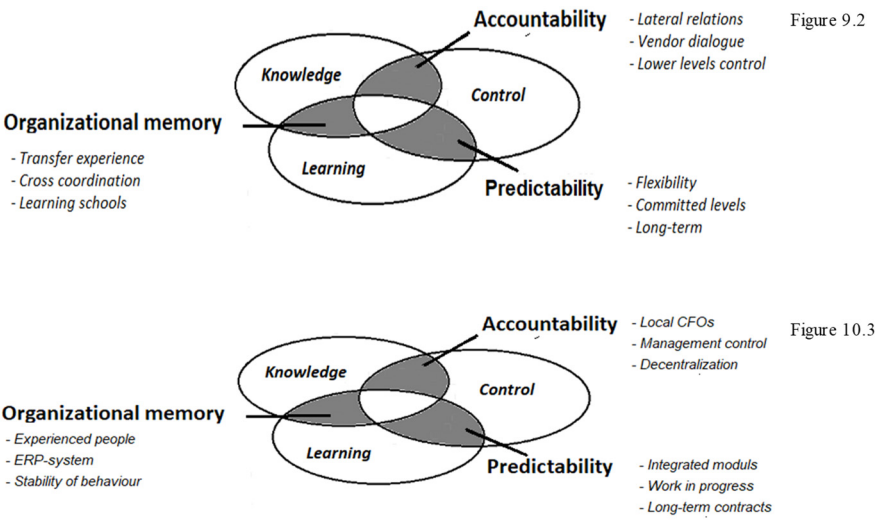

Figure 11.2 Comparison I showing intersections of knowledge, control, and learning

SunLibrary is described (Hill, 1996) as already outsourced from Sun to Adecco, which means that data in the article is only presented for the already outsourced library function managed by Adecco. No data is available for an interpretation of the outsourcing company Sun. A comparison between the aspects of the

organizational routines seen from the outsourcing company's point of view is therefore limited to Sandvik Crushing and Screening (Figure 9.2 in Figure 11.2) and Assemblin (Figure 10.3 in Figure 11.2). The descriptions of the different intersections are all provided in the case analyses in Chapters 9 and 10.

Organizational memory is in both Sandvik Crushing and Screening and Assemblin dependent on the experience of experienced people. It is discussed as systems and cross coordination to get stability of behavior and transfer of experience. Learning schools are dominant in Sandvik Crushing and Screening and the ERP system is dominant in Assemblin. Aspects of knowledge and learning reflect the complexity of organizational learning as part of the normal operations of the firm, determined by the organizational memory.

Accountability represents knowledge and control to secure control over action and coordination of knowledge and performance. When it comes to accountability there is a similarity between the two companies in their faith in decentralized control; expressed as local CFO's, lower levels of control, and control discussed as lateral relations and vendor dialogue.

Predictability is discussed as 'long-term' in both cases. Sandvik Crushing and Screening that works with hundreds of vendors explains the desirable stability as committed flexibility. Long term is interpreted in the sense of tolerating volume changes in the industry without cutting off vendors. Assemblin that works with few bigger units discusses integrated modules and contracts, which mirrors the project organization of a construction industry, where work in progress is of importance for accounting over longer periods of time.

11.1.3 Comparison showing consequences

This comparison deals with the consequences of outsourcing. Here the 'is-like' interpretation of memory, accountability, and predictability from inside the organization meets a critical 'is-not' interpretation. The inside 'is-like' interpretation is pushed outside boundaries and off context by rejecting the inside as the base of discussion to demonstrate how the organization must cope with the 'is-not' interpretation in form of amnesia, discharge, and unforeseeability. The consequences of outsourced organizational routines are shown in Figure 11.3 with respect to SunLibrary (c.f. Figure 8.2), for Sandvik Crushing and Screening (c.f. Figure 9.3), and for Assemblin (c.f. Figure 10.4). The organizational routines of the regular activities crossing the boundaries due to outsourcing, show the consequences for discharge, amnesia, and unforeseeability. SunLibrary does not

manage to provide relevant key services to Sun when both control and knowledge of the library function was outsourced. The consequences for Sandvik Crushing and Screening is analyzed in Chapter 9 and shows how production, interfaces and coordination were affected. Assemblin analyzed in Chapter 10 tells about similar impact of technology, reorganization, and coordination.

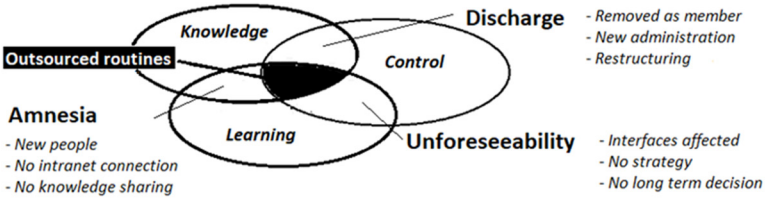

Figure 8.2

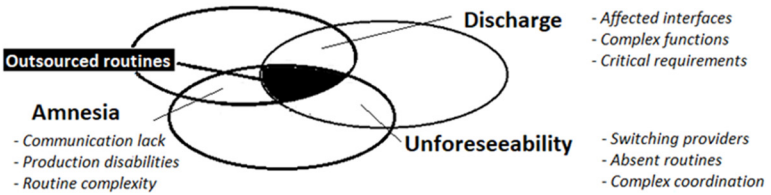

Figure 9.3

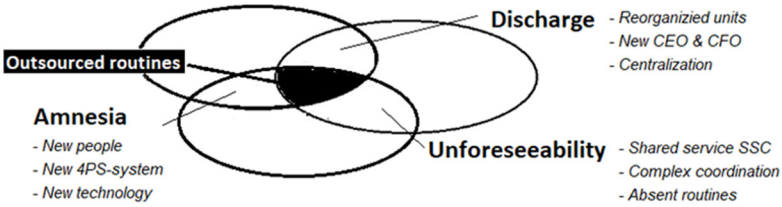

Figure 10.4

Figure 11.3 Comparison II showing consequences of amnesia, discharge, and unforeseeability

Amnesia signifies for SunLibrary consequences of being ignored as a business unit partner and not getting access to internal and external knowledge for creating the important intranet connection and sharing databases. Technological obstacles and no system access are mentioned as organizational amnesia due to outsourcing.

In Sandvik Crushing and Screening, amnesia is discussed as lack of communication, disabilities and routine complexity. The experience of amnesia is very similar between the companies but exposed differently. Sandvik Crushing and Screening, working directly on the production site in Svedala, notices the

consequences without doubt as more hands-on consequences. The same complexities and disabilities are supposed to have more indirect and delayed consequence in the case of a librarian information system as in SunLibrary.

In Assemblin, it also resulted in coordination problem with the new ERP system, comprising new technology and new people in the shared service center (SSC).

Discharge is the consequence of restructured accountability due to outsourcing. SunLibrary is removed as a team member from the intranet of Sun and exposed to the new administration of Adecco. The consequences can be interpreted both negatively in terms of lost knowledge about Sun's business, but also in terms of getting more efficient performance control from Adecco, with the positive consequences of being able to develop the librarian services in new directions, which however had to be re-incorporated in Sun to be used.

Discharge is explained in Sandvik Crushing and Screening more as 'phantom limbs pain', emanating out of the daily routine activities. With hundreds of partners outside the company, it is difficult to keep up with both consistency and flexibility. If connections to the internal routines are lacking and the interfaces are complex in terms of knowledge and tacit knowing, they affect both quality and effectiveness.

In Assemblin, discharge is about re-organization and centralization of the financial units to the SSC in Stockholm. Working with local construction projects, the centralized management control seems to have had rather immediate routine coordination problems in calculating and controlling work in progress. This was accentuated with new, unexperienced people in charge of a new ERP system.

Unforeseeability means that it is difficult or impossible to foresee long-term consequences, when predictability is lost due to outsourcing. In SunLibrary, the interfaces with Sun were disturbed and it was therefore impossible for SunLibrary to plan the work according to long-term decisions made by Sun. Incompatibility with the long-term strategy of Sun led to that SunLibrary was incapable of taking long-term decisions and delivering services in line with Sun's strategic projects and financial undertakings.

Sandvik Crushing and Screening and Assemblin must both take notice of the complex coordination that is required because of outsourcing. According to the sourcing manager in Svedala, switching providers has unforeseeable consequences in form of missing routines and unnecessary difficulties when it comes to coordinating. This is also the reason why the local subsidiaries of Assemblin have difficulties coordinating cost calculation of works with the SSC in Stockholm,

where the new employees have a lack of tacit knowing connected to project routines of the construction industry.

11.1.4 Concluding remarks

The variability and stability of the organizational routines are affected when organizational routines cross the boundary of the business organization, due to outsourcing. The three aspects of knowledge, control, and learning of the organizational routine show how the analysis of the organizational memory, the accountability, and the predictability of an organization provide an understanding of the losses. The losses that the organization suffers, when organizational routines are cut off context and outsourced, are dealt with as amnesia, discharge, and unforeseeability and appear in a varying degree in the three cases SunLibrary, Sandvik Crushing and Screening, and Assemblin.

Seen from the SunLibrary perspective, increased efficiencies in performance and business improvement were obtained in the interaction with people from Adecco due to the possibility to use Adecco's superior administrative routines. The focus on organizational routines shows how old and new routines could work together, as well as how the interaction with people and tacit knowing reinforced the outsourced librarian function and built the organizational memory. However, the disturbed interfaces with the outsourcing company Sun had quite the opposite consequences on accountability and predictability and made it impossible for SunLibrary to work on strategic long-term projects outside of Sun's accountability.

In Sandvik Crushing and Screening, earlier outsourcing experience and the cooperation with hundreds of sub-contractors seemed to have opened for the perception of and conscious handling of the tacit knowing of the employees. The cross functional teams and the learning schools show how transfer of knowledge is possible when boundary spanning between the different experts of the company and its subcontractors is organized in communities of practice.

As shown in Assemblin, when the routines were backsourced to the subsidiaries, it resulted in regained knowledge, which means that knowledge does not necessarily erode, when the organizational routines of a function are outsourced and no longer in use in the original context. Loss of memory does not necessarily result in amnesia and loss of accountability does not necessarily result in discharge, when knowledgeable employees, as the former CFOs and CEOs of Assemblin, are present and allowed to intervene.

In all three cases the organizational routines were interpreted in different intersections, which gave a coherent view of the firm's repertoire of actions regarding organizational memory, accountability, and predictability instead of focusing on transactions and contractually separated issues.

11.2 Theoretical Contributions

The analysis emanates from the different aspects of knowledge, control, and learning as well as from the intersections of organizational memory, accountability, and predictability, and their antonyms. They have resulted in contributions to the different theoretical areas of knowledge, control, learning, and boundaries, of importance for outsourcing and organizational routine theory. Some concepts have been expanded as the importance of a knowledgeable agent and tacit knowing. Extensive concepts as organizational boundaries have been examined into detail. Especially the concepts of control and accountability at lower boundary levels present a new understanding of boundary management and the role of local knowledge as the link between internal and external systems in outsourcing processes. The necessary ingredients of these theoretical contributions are communicated around which factors to consider, how these factors are related, and explained by underlying rationales (Whetten, 1989).

11.2.1 The importance of tacit knowing

Organizational routines can be a source of change because the actual performance of a routine is able to create new patterns that relate to the distinction between 'ostensive' and 'performative' aspects introduced as the generative system of Pentland and Feldman (2005).[79] The performative aspects, created through practice and defined as "… actual performances by specific people, at specific times, in specific places …" (Pentland and Feldman, 2005: 795) bring the routine to life and allow agents to choose a course of action. It also implies that improvement of the routine only can be obtained with the active cooperation of employees involved in its performance (Winter, 1996).

However, when an agent is brought into the analysis, it is not possible to neglect the difference between the tacit knowing of the agent and the explicit knowledge

[79] See also Figure 3.1 in Section 3.3.

that is stored in documents or computer files. Polanyi's analysis (1966, 1967) therefore contributes to the interpretation of the performative aspects. It provides a possibility to understand the importance of the 'knower-dependency of knowledge', which means that feelings and intuitions are necessary elements of knowing (Virtanen, 2013). It emphasizes the strong 'involvement' of employees, like in the SunLibrary, and staff creating development, like the significance of the 'dedicated' suppliers of Sandvik Crushing and Screening in reaching flexibility, as well as the 'experienced' employees of the subsidiaries of Assemblin. Such involvement in performance is assumed to be of importance when functions or activities change due to outsourcing. It needs highly qualified individuals, a long-term appraisal of performance, and minimal control (Raiborn *et al.*, 2009).

The on-going personal participation of a 'knower' as shown in all three cases is required to handle tacit knowing, which is intrinsic to all knowledge and thus to the performative aspects of the organizational routine. Polanyi (1966: 7) illustrates this by showing how the text in a manual on how to drive a car must shift into the back of the driver's mind to become the tacit real skills to drive the car. To realize the performative aspects of a routine, tacit knowing is essential to understand how gaps hinder performance and how loss of tacit knowing results in break-down of knowledge in routinized organizational operations.

The performative aspects determine real skills of specific people, at specific times, and in specific places. Tacit knowing represent 'practice' that refer to how work is done. However, the performative aspects of the organizational routine require an agent. The routines must be determined by the underlying character traits of the agent by which 'tacit knowing' could enter the organizational routine studies:

> … understanding may be recognized as the faculty, cast aside by a positivistic theory of knowledge, which the theory of tacit knowing acknowledges as the central act of knowing. In this sense the practice of skills, the diagnosing of physiognomies, the performance of tests, the use of tools and probes, and the meaningful uttering of denotative words, are so many acts of understanding complex entities. (Polanyi, 1962: 605)

Definitions of tacit knowing have been misinterpreted by knowledge management. Transferability without participation of a knower is a misinterpretation of Polanyi (Grant, 2007). Knowledge management focuses on how to manage the structural capital, like documents, management systems, databases, and tends to separates knowledge from the knower (Mentzas *et al.*, 2003).

Thus, tacit knowing should not be ignored since the interaction between the individual agent and the organizational routine is essential for the dynamics of the routine performance in all three aspects of knowledge, control, and learning.

11.2.2 Organizational learning in communities of practice

Organizations, struggling to quantify tacit know-how of individual stakeholders, have recognized the importance of teams, networks, and communities of practice. However, the impact of information and communication technology in knowledge management tends to support codified explicit knowledge rather than tacit knowing (Venkitachalam and Busch, 2012).

However, it is shown how knowledge and skills are built by employees that work together to perform a common organizational task (Weick and Roberts, 1993; Weick, 1996; Wenger, 2000). Organizational learning involves the development of shared knowing and experiences, to a large extent created in communities of practice (Lave and Wenger, 1991; Brown and Duguid, 1991; Wenger and Snyder, 2000; Lam, 2014).

The intersection between knowledge and learning, i.e., organizational memory, highlights how experiences must be both transferred between people and coordinated in the organization to be held in the firm's files, records, procedures, and policies, as well as in its culture, 'theories-in-use' (Argyris and Schön, 1996) and 'communities of practice' (Brown and Duguid, 1991). Learning involves becoming "… a member of a community of practice through apprenticeship" (Kolb and Kolb, 2005: 200). It means that teams of employees and groups of professional individuals are exposed to collaborative learning, while they perform routines of organizational tasks in the light of others' tacit knowing. Tacit knowing plays an important role in all individual and group thinking, being the enabling condition for explicit knowledge. This has not been clearly developed in knowledge management that did not fully respect the subjective side of Polanyi's tacit knowing as it had the roots in Nonaka and Takeuchi's theory "… that undermined the claim to pure objectivity." (Mooradian, 2005: 105)

Thus, knowledge and learning could be meaningfully transferred across boundaries within an organization, if 'communities of practice' are created as boundary spanners that allow the altering of perspectives in the light of others' tacit knowing or skill memory, which would help coordinate ideas and actions that circulate within the organization. Creation of knowledge is expected at the boundaries between organizations, but boundaries could also be interpreted as

boundaries within the organization. The 'internal boundary works', referring to the importance of communities of practice for organizational learning, is shown to outrage the difficulties of development in unstable environments (Aldrich and Herker, 1977; Kellogg *et al.*, 2006).

A community of practice is demarcated by a boundary that defines the scope of interaction. The scope of interaction is the organizational domain defined by "… technology included, population served, and services rendered" (Thompson, 1967: 40). Boundary spanning is mostly presented as an organizational function like the shared service center (SSC) of Assemblin where defined roles and routines limit the dependence on specific individuals.

Thus, communities of practice stress shared practice within which learning takes place as discussed in the learning schools of Sandvik Crushing and Screening. They consist of professionals that interpret their professionalism as the experts in the cross-disciplinary support teams. These empirical evidences contradict that communities of practice tend to have limited capacity to create new knowledge. On the contrary, it seems like the cross-functioning expert groups gathered from different departments can reach the balance between supporting transfer of existing knowledge and exploring new knowledge, i.e., handling development of quality. However, outsourcing problematize the 'internal' and the 'external'. Relations that cross the boundaries of different organizations could cause other problematic delimitations, not resolvable in 'communities of practice'. In Sun Library, for example, communities of practice are not an issue, because SunLibrary was not considered 'part of the team' through contract stipulations and was therefore not allowed to handle proprietary information and confidential inquiries of Sun (Hill, 1998).

11.2.3 Trading zones as coordination across boundaries

With routinization, the 'community of practice' assumes that individuals, participating in similar activities, develop shared meanings (Brown and Duguid, 1991; Lave and Wenger, 1991), while the concept of 'trading zone' builds on negotiation in establishing a boundary project between organizations. A 'trading zone' highlights coordination referring to how differences are bound together through trade (Galison, 1997; Gorman, 2002; Kellogg *et al.*, 2006).

A boundary defines and limits the scope of interaction in the sense that it serves to differentiate between different points of view, but also to negotiate and shape domains. Crossing or extending boundaries through outsourcing has

consequences for the firm's scope of interaction, in the creation, sharing, and transfer of knowledge (Carlile, 2002; Bechky, 2003; Garrety *et al.*, 2004). Boundary crossing involves a command over spaces and times, implicating the legal boundaries of companies but also boundaries created by the flows of products and services.

People and firms need outside sources of competence and interaction to complement the view they have developed (Nooteboom, 1999). However, as management has almost no control over what happens outside the organization, the scope of interaction must define a boundary object, like a 'trading zone' that establishes a shared context and "sits in the middle" (Star 1989: 47). The concept of 'trading zone', is used by anthropologists to indicate disunified traditions and cultures (Galison, 1997; Gorman, 2002), showing how coordination of actions requires navigation through differences in norms, meanings, and interests. Trading zones help different organizations to agree on the general procedures of exchange to reach shared understandings for how outsourcing should proceed.

In outsourcing, knowledge transfer, monitoring, and control are the great deterrents (Aron and Singh, 2005; Kjellström, 2017). Focusing on the intersections of the three aspects of knowledge, control, and learning, is therefore important in establishing a 'trading zone'. The organizational memory is important because it links past experience of the external economic reality, stored in organizational routines to be available to future generations of employees. Regarding the fit between the organization and the environment, accountability is important for securing interdependence of action and interpreting the coordination of knowledge. In adapting and transforming routines, predictability grants reliability and regulation of action. Organizations seem to respond to environmental complexity by expanding internal structures like 'communities of practice', (cf. Section 11.2.2), which are different from trading zones that are established between different organizations to transfer, translate, and transform processes and routines according to the framework[80] of Carlile (2004). Thus, a trading zone serves as a link between the internal and external systems to enable the replication of an existing routine in a new organizational setting. Replication could also be hindered by the fact that few routines are 'stand-alone'; changes is accompanied by changes in other parts of the routine (Nelson and Winter, 1982; Augier and Teece, 2007).

[80] See also Figure 7.2 in Section 7.6.

Outsourcing brings lots of work, like coordination of processes and routines and negotiation with providers to develop relevant services (Macdonald, 1995). Transferring 'best practice', involves also setting up 'technology of replication' (D'Adderio, 2011). Replication is about re-creating a routine in and through different contexts (Winter, 1996). Boundary works could enable the replication of an existing routine in a new organizational setting (D'Adderio, 2014; Bucher and Langley, 2016). Trading zones could be developed as platforms for replication of a routine, to help structuring routines that are established by shared experience of the past and usually are rather difficult to replicate (Nelson and Winter, 1982). It involves organizational learning and transmission of knowledge across both organizational levels and boundaries of the organization.

However, trading zones may fail to become boundary objects-in-use, i.e., useful across fields. Conflicting interests between the outsourcing parties increase efforts of learning and costs of negotiating. Here the antonym concepts of 'amnesia', 'discharge', and 'unforeseeability' that indicate loss of memory, accountability, and predictability, are perspectives necessary to understand how trading zones must involve closer integration and coordination across boundaries.

In the SunLibrary it is told how service information that was prepared in different ways, did not manage to bridge the gap between outsourced employees and Sun employees. The response by the senior management of Sun was to bridge the gaps by increasing property rights. The similar is seen in the shared service center (SSC) of Assemblin, where joint structures and processes failed in negotiating boundary crossing. The organization came to suffer from amnesia, when the SSC did not manage to handle the scope of interaction to reach a joint practice that could transfer, translate, or transform the ERP knowledge.

11.2.4 Knowledge creation through exchange at boundaries

In outsourcing, activities traditionally handled by internal staff and resources, moved outside the boundaries, could result in lost interactions also inside the boundaries. Boundary works could enable the replication of an existing routine in a new organizational setting through interplay between departments and exchange at the boundaries as was shown in Sandvik Crushing and Screening, where the creation of product quality was of uttermost importance. The firm could in this sense be described as a bundle of different types of boundaries, where knowledge is shared and assessed (Leonard-Barton, 1992; Carlile, 2002). It suggests that organization members from diverse specialties share or interpret differences to jointly transform and create local knowledge.

There are different perspectives on coordination across boundaries in cross-disciplinary interaction (Kellogg *et al.*, 2006). New knowledge tends to emerge at the boundaries between specialized domains with different perspectives (Leonard-Barton, 1992). This is well illustrated by Sandvik Crushing and Screening, where outsourcing is treated like a development project and the project manager consciously works with 'cross-functional' people to create a reliable picture of the sourcing needs. Here people with vast experience in purchasing work together with R&D and the different production sites.

Important for further discussions on organizational routines that cross boundaries due to outsourcing is that Turner and Rindova (2012) have noticed that organizations have difficulties to establish both consistency and flexibility with customers outside the organization because customers are lacking connections with the internal routine participants. The effects of consistency and change in routines functioning are central debates in routines theory. How to balance consistency and change in different contexts where variability and change appear to dominate is of importance. The dependency on the raw material market during the 2000s and the 2010s could be interpreted as a variable environment for Sandvik Crushing and Screening that made development difficult. Unstable environments are likely to increase the need for flexibility in outsourcing. The exchange of knowledge within the organization at the boundaries between different departments could be interpreted as 'internal boundary works' in the communities of practice that compensated for the difficulties of 'external boundary works' in trading zones with the supplier.

Changes in the old established organization were not especially expected by Assemblin due to instability caused by a highly changing market and business problems after the bankruptcy of IMTECH. The shared service center (SSC) could therefore not be a means of responding to the environment by modifying processes and routines. Maybe, this could explain the difficulties of the SSC to survive.

Thus, creation of knowledge is expected at the boundaries, and it is necessary to explore the internal boundaries in the organization, which refer to the importance of communities of practice for organizational learning (cf. Section 11.2.2) as well as the importance of the trading zones at the external boundaries between organizations (cf. Section 11.2.3).

11.2.5 Accountability and local knowledge

That control procedures need to match the context in which they operate has long been discussed (Otley and Berry, 1980). Most accountability takes place within the boundaries of the organization. Two forms of accountability exist: The formal, hierarchical accountability and the informal engagement in lateral interdependence (Roberts, 1991: 365). Accountability ranges over space and time, focusing both on future potential and on past accomplishment (Hoskin, 1996).

The link between accountability and local knowledge of performance is highlighted in this study. Accountability demands competence (Choudhury, 1986; Merchant, 1998). To be held accountable sharpens the senses of how to act in social practices and renders local levels of management more visible.

In case of outsourcing, organizations try to achieve accountability and predictability through regulation and control at the boundaries (Thompson, 1967). New centers of responsibility and accountability are needed to identify definite boundaries between organizations (Ezzamel *et al.*, 1997). To meet local knowledge relations, lateral controls has been considered more flexible than traditional management control systems in lateral relations like outsourcing (Van der Meer-Kooistra and Scapens, 2008). Lateral controls cope with and can exploit the tacit dimension, where trust and the behavioral dimensions of control are needed.

Monitoring of routines is called for, when conventional boundaries of time and space are challenged, which implicates a distinction between centers and peripheries in terms of power and influence (Mouritsen, 1999). A control domain that regulates and controls transactions must establish routines that uphold and transmit activities as well as changes. A management control system structures and communicates knowledge as expectations across the organization (Simons, 1994). However, the framework focuses on top level and does not emphasis behavior at lower levels of the organization. Control of transactions at the boundary level gives the opportunity to recognize and define the ability to understand the organizational reality and eventually share 'frames of reference' (Tolbert, 1988 in Sohn, 1994). Outsourcing is 'a matter of reframing' (Hedberg, 1981: 2) that breaks down conventional boundaries and requires flexibility and adaptation of local knowledge. In this sense, the organization tries to achieve predictability and accountability through regulation of transactions at the company's control boundaries.

Outsourcing of SunLibrary shows the difficulties of keeping the access to Sun open. In SunLibrary, outsourced staff was not easily accountable for local

knowledge; they had to spend hours on security and had no simple access to Sun's equipment and Sun's intranet.

In Sandvik Crushing and Screening, the decentralized control system based on knowledge of everyday actions of the different work groups seemed to be flexible enough to smooth the accountability problems of the formal hierarchical management control system. Here social knowledge, i.e., the value system of a counterpart (Ouchi, 1980; Tolbert, 1988 in Sohn, 1994), is used as a non-economic governance mechanism that also considers trust to reach increased economic efficiency in exchange relationships.

In Assemblin, local functions and the new boundaries within and between the organizations should have been identified. To keep up with the new organization after the bankruptcy of IMTECH, new centers of accountability were required. However, Assemblin started a shared service center (SSC) in Stockholm that did not take local knowledge into account. The centralized control system showed to be a poor channel for information from the different subsidiaries. New people in Stockholm did not managed to contribute to the control process over knowledge flows created by the old local routines.

Thus, outsourcing shows that there is a need for the empowerment of the lower levels of the organization. Flows created by the routines continue to exercise their controlling effects, pushing the organization in directions important for learning and change. Levels at the boundary of the organization engaged in the outsourcing process must be mobilized, because the performance of being in control, i.e., accountable, is very much dependent on human judgment, reflection, and knowing.

11.2.6 Divergence and path-depended changes

Changes are difficult to study because of the difference between more radical, frame-breaking changes and the emergent micro-changes that result from small variations in performance. Small changes cannot be ignored because organizational routines are continuingly created through such action (Feldman and Orlikowski, 2011).

The evolutionary view favors the going concern in establishing routines, while transaction cost economics fails to recognize the path-dependent nature of routines. Organizational routines show difficulties in explaining organizational stability when there are variations in individual performance. A concept like path-dependence is therefore chosen to show that organizational structures and rules

are persistent and not easily changed by individuals. However, there could be small and slow shifts that result in changes in the path-dependent pattern (Ortmann, 2010 in Geiger and Schröder, 2014).

Organizational learning is a path-dependent process (Cohen and Levinthal, 1990), able to create new knowledge through combination and exchange. Efforts in learning and costs of negotiating conflicting interests could have a negative impact because outsourcing it is a matter of departing from prevailing routines, i.e., from path-dependency (Nelson and Winter, 1982). Essential coordinating information is stored in the organizational routines and 'remembered by doing', which make routines persist over time and explain path-dependency. 'Path-dependent' routines from the different subsidiaries must have been directly or indirectly responsible for the quality of the shared service center (SSC) (McIvor, 2008). Assuming a divergence in practice and history between the different subsidiaries of Assemblin underline that everyday work processes are 'path-dependent' and not easily changed by the SSC.

Divergence between artifacts and the ostensive aspects may indicate disagreement between management rules and working routine patterns, which was discussed as the difference between the resource planning system *per se* and the use of the system for the calculation of construction projects by the CFOs in the subsidiaries of Assemblin.

On the other hand, divergence between the ostensive aspects, i.e., the patterns, and the performative aspects, i.e., the way of working, is cognitive and creates possibility to reflect and alter the future iteration of the routines (Pentland and Feldman, 2005: 810). This divergence captures the internal dynamics of the routine that result from how people act and support the idea expressed by Nelson and Winter (1982: 100) that all organizational members must continue to 'know the job' because the organizational routines are remembered by exercising.

However, to explain routine change or routine stability from variations in individual performance is problematic, even if ideas about tacit knowing may help (cf. Section 11.2.1). Small changes may be observed, but the underlying pattern may remain stable despite variations in performance. Those viewpoints that emanate from the individual actor as the source of change or stability do not integrate organizational factors.

A theory of routine change must be able to explain both individual and organizational drives. The importance of both the structural side and the employees as critical sources of knowing was well illustrated by Assemblin's SSC in Stockholm. The solution to divide the Assemblin shared service center (SSC)

grew out of a misfit between the resource planning system and the script to guide calculation, but also from the fact that only new people without experience worked at the SSC. Both organizational and individual reasons were present.

On the other hand, with the concept of path-dependence used by Nelson and Winter (1982) it is possible to show how organizational structures and rules are persistent, like the enterprise resource planning (ERP) system in Assemblin. The ERP system was not randomly chosen. It is traced back to the Dutch history of the company, when the ERP system was changed to the Dutch 4PS system emanating from the Dutch group IMTECH. Organizations are said to follow a path-dependent pattern due to "… constraints in terms of budget, space, or time that will prevent organizations from selecting other choices …" (Law, 2018: 342). Path-dependence explains organizational rigidity and inertia. And in so doing, it also explains how decisions in Assemblin were limited by earlier decisions, made by the experienced CEOs and CFOs that were recalled to the subsidiaries in Gothenburg. The evolutionary view favors the going concern bearing in mind historical complexity and the path-dependent nature of organizational routines.

Also, in Sandvik Crushing and Screening there are strong historical reasons for the vital cooperation with subcontractors to secure accurate product quality using support teams at the supplier factories, which was already initiated during the volume outsourcing to Turkey in the 1990's.

It is necessary to consider that the historical decisions by an organization determine the direction of new decisions, which is well illustrated by the long history of the two cases Sandvik Crushing and Screening and Assemblin. Thus, to analyze and understand changes, path-dependence with both organizational and individual attributes must be considered.

11.2.7 Coordination in the 'third wave' of routine research

The present 'third wave' puts artifacts at the very centre of the routines theory and provides a deeper and more nuanced characterization of the role of materiality and technology. Artifacts, in form of technology or in the complex ways in which routinized performances are influenced by technology, have become an explicit topic in the present 'third wave' of organizational routine research, as discussed in Section 3.6. The framework shows how actors' knowledge, skills, and competences depend on the involved artifacts that are repeatedly performed and supported by technologically embedded rules (Oliveira and Quinn, 2015). Artifacts play a fundamental role in the production and reproduction of routines

that helps understand the role of non-human actors. Artifacts are illustrated by the internet solutions in SunLibrary and the 4PS-system of Assemblin.

From the 'third wave' of routines theory it is possible to understand how changes in organizational structure, technology, and context affect the survival and the reproduction of the organizational routine (D'Adderio, 2008: 2011). The configurations of artifacts are transformed by the tools that are used. It leads to different outcomes that will affect the routines crossing boundaries, due to sourcing decisions. The 'third wave' highlights the importance of artifacts over agency.[81]

The forms of coordination used in inter-firm relations largely determine outcomes, which have been highlighted by the outsourcing situation in the studied cases. Coordination is central to the organizational performance. Coordination of inter-organizational relations with outside companies creates problems. For example, to sustain what Sandvik Crushing and Screening calls 'flexibility' among routine participants, specific coordination groups were required to establish the balance between internal demand and external supply.

Organizational routines are created and recreated through practice, which relate them to a specific context, established on knowledge of past experiences (Nelson and Winter, 1982: 112). The performance of a routine requires coordination specific to the organization and indicates a strong connection between knowledge, routines, and context. However, the analysis of the artefacts of the 'third wave' tends to make technological structure more important, overshadowing the ostensive and performative aspects of the routine that highlights the role of the human actors in the organization.

As shown in all three cases there are consequences in concentrating on artefacts in form of technology, without paying attention to the ostensive and the performative aspects. In exploiting the internet possibilities, for example, only people from Sun were able to contribute with full competence for optimal solutions, because contract employees were blocked by security check-up systems. In the interpretation of both Sandvik Crushing and Screening and Assemblin, the decentralized organizational structure was especially emphasized for dealing with local accountability and knowledge (cf. Section 11.2.5). Here, artifacts, to function as objects for change, must be understood as technology interfacing the social context, not just factual technology. Technologies are understood as

[81] According to Artificial Intelligence (AI) key technology brings about new challenges in concepts like artifacts and agency (Boyd and Holton, 2018).

managerial, political, or technical, and in a broader sense as codified bodies of knowledge and structures, embedded in settings that shape practice (D'Adderio, 2008; Pentland and Feldman, 2008; Turner and Rindova, 2012). It is important to note how actors' knowledge, skills, and competences are connected to the artifacts. The reason is that artifacts do not evolve, until organizational members engage in the performance.

It is, therefore, not enough to design a procedure to achieve a certain performance, which was illustrated by Assemblin, where the shared service center (SSC) and the new 4PS system did not manage to cope with the social context of complex construction projects. Integrating new knowledge that has been produced without coordination with the context of a specific firm is understood as most difficult ('the not-invented-here syndrome') (Macdonald, 1995: 560), because knowledge is often seen as associated with a specific plant, equipment, or functional expertise. Information technology, introduced to replace parts of routines, often fail without the tacit knowing of in-house staff as system integrators, which is well illustrated by the Assemblin SSC. In moving the accountability system to a SSC, nobody was able to serve it. The organizational memory serves as an important coordinator of the firm's activities, where the organizational routines of for example an ERP system structure the firm's activities. The learning schools in Sandvik Crushing and Screening illustrate the contrary, where the employees were used as integrators.

The 'third wave' interpretations involve difficulties in keeping up with lost interactions in the activity systems due to outsourced organizational routines discussed as loss of memory, loss of accountability, and loss of predictability. Lost interactions in organizational routines, not shown by the analysis of artefacts, are said to diminish the effectiveness of the remaining activity system. Due to lost interactions, the organization is left with 'phantom limb pain'.

Thus, the focus on artifacts is problematic. The knowledge of the firm is shown to be a system of coordination that combines relations and tasks into productive performance. It underlines the initial assumption that an organizational routine is not to be understood as a resource but as a service that the resource renders (Penrose, 1959/1995). The 'organizational memory' is assumed to reside in such a system of coordination that combines relations, tasks, and past track record of success, emanating out of the daily routine activities.

11.2.8 Concluding remarks

Adding 'tacit knowing' of an individual agent provides a new determination of the performative aspects of the organizational routine, which is essential for the dynamics of the routine performance and should therefore not be ignored. It must also be taken into consideration that the individual agent, the bearer of tacit knowing, is collaborating in 'communities of practice' important for the transfer of knowledge and for the enabling of learning across the boundaries within the organization.

Even more, outsourcing renders the internal context and external context of the organization negotiable. To enable boundary crossing between organizations and the replication of the existing routines in new settings, 'trading zones' are shown to be used as links at the boundaries that enable learning to develop in negotiations of knowledge perspectives between different organizations.

'Local knowledge' is of importance for the accountability and predictability of the organization in outsourcing. Outsourcing shows that there is a need to mobilize the lower levels of the organization in contact with 'local knowledge' of the boundary crossing activities to be accountable for the performance. The importance of the lateral control systems is that they consider the fact that accountability means being in control of knowledge.

Using the concept of 'path-dependence' instead of studying changes through the divergences of the performative and ostensive aspects of the organizational routines is supposed to explain both individual and organizational drivers of change. Historical decisions by an organization determine the direction of new decisions, which is well illustrated by the long history of the two cases Sandvik Crushing and Screening and Assemblin.

The so called 'third wave' of the organizational theories that focus on artifacts must take account of that the knowledge of the firm is a system of coordination that combines relations and tasks into productive performance, where the artifacts in form of technologies are important but not decisive.

11.3 Practical Implications

Outsourcing causes organizational routines to be cut off from their original activity context. Some important consequences are drawn by the three different

cases of SunLibrary, Sandvik Crushing and Screening, and Assemblin. In a real sourcing situation, type of firm, scope, transfer, routines, and context (cf. Section 11.1.1; Figure 11.1) must be taken into consideration, when looking at risks and losses both in the short and longer run. However, even if advices cannot be given in general, some questions are generated out of the analysis and are mentioned as 'lessons learned' connected to the three cases discussed.

The practical implications give answers to the employee participation, development of competence, and effectiveness in outsourcing operations. However, questions discussed above are also addressed in the following. When a company outsources certain functions built up by organizational routines does it also lose technological knowledge and the knowing of its employees (Feldman and Orlikowski, 2011)? How can the firm take care of routines out of control, i.e., outsourced and removed from the accountability of the organization (Elharidy *et al.*, 2013)? Does a firm that outsources also lose the capability to evaluate new applications and keep up with innovation, i.e. lose its learning capacity (Willcocks *et al.*, 2004; Blumenberg *et al.*, 2009; Raiborn *et al.*, 2009; Yakhlef, 2009). Could knowledge and learning, lost through outsourcing, be re-gained through insourcing, i.e., backsourcing (Yakhlef, 2002; Sundquist *et al.*, 2015; Law, 2018)?

11.3.1 Participation of knowing employees is required

The importance of employees as critical sources of knowing has been learnt from all the three cases, SunLibrary, Sandvik Crushing and Screening, and Assemblin. The cases show how the participation of experienced employees or knowledgeable subcontractors determines the transferring of tacit knowing that upholds the work practices. The interaction between a routine's implementer and the routine itself is considered important (Feldman, 2000).

'Communities of practice' (Brown and Duguid, 1991; Wenger, 2000) are shown important for transferring tacit knowing between employees within different specialities in different departments of the same organization.

'Trading zones' (Kellogg *et al.*, 2006: 39) are shown important for transferring knowledge across boundaries between the outsourcing company and the subcontractor. Interaction across boundaries could be facilitated with the help of coordination structures that emerge from practice. The metaphor of a 'trading zone' highlights the local coordination of ideas and could be used to cope with hidden interfaces and consequences of interactions.

The importance of the tacit underlying parts of a routine that uphold work practices and require personal participation has been discovered in all three cases. In SunLibrary, an experienced librarian was employed by Adecco as manager to run the librarian businesses that Adecco did not manage. Sandvik Crushing and Screening learnt how quality complexity must be adjusted and developed in cooperation with the subcontractors' network. This understanding resulted in the development of support teams and learning schools. In Assemblin, the tacit underlying parts that upheld the work practices required personnel participation; it was not taken care of until the backsourcing of the shared service center (SSC) to two separate accountable subsidiaries in Gothenburg was allowed.

For outsourcing companies there are much to learn from these experiences. Several actors together in a team could perform the routine in new ways that generate variations and exceptions of the routine (Feldman and Rafaeli, 2002; Feldman and Pentland, 2003). If the management of Assemblin would have perceived that there was knowledge to transfer, more attention would have been paid to the tacit knowing in the ERP system and not just to the dominating artifacts of the ERP system and the formal, systematic language of reports and databases. The performative aspects like new people trying to cope with the routines and the ostensive aspects in form of the missing CFOs were not enough to cope with the fact that work practices and personal participation upheld the organizational routines in the outsourcing situation.

11.3.2 The managerial perception governs

The environment enters through the managerial perception (Penrose, 1959/1995); it is not endogenous of the routines. Outsourcing from the plant in Svedala was long treated as 'big volume' and 'low cost' outsourcing to Turkey as the dominant managerial perception. To cope with both cost and quality control, it was important to concentrate into one geographical area to be able to transmit knowledge. Outsourcing involved a replacement of the pattern of quality control routines, both in Svedala and by the sub-contractors in Turkey. It enabled the production people to understand also the opposite, i.e., that low volume products that required specialization should be kept close to Svedala, to adjust and develop quality in cooperation with the subcontractor.

Feldman and Pentland (2003) argue that routines can change patterns that are created and recreated through practice. Divergence between different aspects of a routine may indicate disagreement between the management perception about outsourcing and the working routine patterns in the production, which was also

discussed as theoretical implications in Section 11.2. However, it seems like the quintessence of flexibility, able to change the extent and scope of outsourcing, was based in earlier experiences of volume and quality controls.

Boundaries between different organizations, with different worldviews, require negotiation to make communication possible. To be able to span the boundaries of the firm, flexibility and participation are highlighted (Kellogg *et al.*, 2006; Van der Meer-Kooistra and Scapens, 2008). This is underlined by Sandvik Crushing and Screening, knowing and telling that outsourcing is about knowing how to work with components produced in and delivered from different places.

In centralizing the accountability system in Assemblin according to a managerial perception of efficiency, nobody was able to work with it at the top management level. It is shown in different studies that top management does not always have the competence to exert control and judge the work done by concerned employees at the local levels (Jönsson, 1998).

11.3.3 How to develop competencies outside boundaries

All three cases show the importance to find a link between internal and external systems to pass on the necessary local information and tacit knowing between the parties.

As was shown in SunLibrary, it was important to orchestrate a global portfolio of technological assets both inside and outside the enterprise. It was difficult for SunLibrary, where the contract and the legal restriction were perceived as a glass wall of different technological arrangements that hindered the knowledge flow. Technology, coding both managers' intentions and formal controls, is an important topic in recent research on organizational routines and can serve as possibilities or constraints. SunLibrary shows how performance is constrained, due to assets like internet solutions orchestrated not by Adecco or SunLibrary but by Sun.

The difficulties with lost interactions of outsourced organizational routines are discussed as loss of memory, loss of accountability, and loss of predictability. The question whether it is possible to regain losses through insourcing must be answered with a yes, which was shown by Assemblin that succeeded to divide the shared service center (SSC) in Stockholm without major problems. Outsourcing seems to involve replacement of existing routines by new and different routines, also with the intention to make improvement of performance. Interactions between aspects of a complex, internal structure of a routine can explain that

organizational learning could be the outcome. Aspects lost through outsourcing seem to have been re-gained by Assemblin through insourcing as discussed in the literature (Yakhlef, 2002; Sundquist *et al.*, 2015; Law, 2018).

When intended outcomes are not reached, there will be consequences, because participants respond by repairing or expanding (Feldman, 2000). After the 'high volume' outsourcing to Turkey, Sandvik Crushing and Screening has learnt how to place specialized low volume products with sub-contractors close to Svedala to be able to work with boundary crossing activities and use the learning capacity outside the company.

11.3.4 How to lose or win through outsourcing

In outsourcing perspectives and trade-offs are negotiated. Due to outsourcing, Sun was released from library service obligations, but SunLibrary was prevented from providing the relevant key services that Sun needed. SunLibrary was removed as a team member from the Sun intranet. SunLibrary was thereby not allowed to share the knowledge of the databases and not able to work with long-term perspectives. Having elaborated these experiences, the practical consequences of outsourcing are rather obvious for the librarian manager Hill and Sun's board of directors. Outsourced organizational routines are 'cut off context', which means that they are 'not visible' at first but could create quite 'visible' problems later on.

Outsourcing is assumed to change the firm's capacity to handle organizational routines out of context and outside the boundary. This is therefore a point of departure when discussing potential losses. As discussed, SunLibrary was not considered 'part of the team' and therefore lost action space when it was not able to handle proprietary information and confidential inquiries.

Organizational routines that survive and develop in outsourcing situations were also shown in the Assemblin case. The discussions were different, but it was shown possible to regain routines outsourced to the shared service center (SSC) in Stockholm. Artifacts, like the ERP system to 4PS, the physical location, and the placement in the organizational structure, were drastically changed. Through negotiating perspectives and trade-offs, the subsidiaries of Assemblin were released from obligations and had to cope with amnesia, discharge, and unforeseeability, due to outsourcing to the SSC in Stockholm.

However, "… complex tasks, unobservable behaviors and messy interactions …" are rendered measurable, visible, and manageable with cost controlling, bound up

with career-based identities and hierarchical accountability (Ezzamel *et al.*, 1997: 459; Knights and McCabe, 1997). The Assemblin subsidiaries in Gothenburg managed to regain the transformed, broken, and lost organizational routines, which were of importance for the transfer of knowledge and learning in and between the subsidiaries.

11.3.5 How to maintain effectiveness of remaining activities

Important is how the organizational structures are affected by the new routines. When organizational routines are cut off, interfaces between the outsourced activity and other operations and technology are affected. The interaction between the characteristics of the routine and its implementer is established through other members' information that is received through routines that formulate and send the messages (Nelson and Winter, 1982).

The sourcing process of SunLibrary involved such transfer of vital organizational routines. In the SunLibrary case, it was understood rather late by Sun how the library function had interfaces deep into the development of Sun. The contract stipulations defined and limited the scope of interactions between regular Sun staff and contract staff (Hill. 1998). Outsourcing should simplify operations and respond to the environment by modifying processes and routines (Macdonald, 1995). There seems to be an inherent capability of the organizational routine to generate change in old established organizations. This was shown by SunLibrary that managed to develop new businesses during the period it was outsourced to Adecco.

In Sandvik Crushing and Screening, people with big experience in purchasing worked together with R&D and the entire technology of the Svedala plant. Internal structures and routines were developed to respond to the environmental requirements of volume flexibility in outsourcing. This response to flexibility is animportant cross boundary coordination between organizations in unstable environments (Aldrich and Herker, 1977; Kellogg *et.al.*, 2006).

Lost interaction in organizational routines is said to diminish the effectiveness of remaining activity systems because of the loss of both organizational memory and the knowing employees capable of keeping up with accountability and predictability. This was also the case when Assemblin centralized the organizational routines of the ERP system to Stockholm with only new people without industry or company knowledge of the financial system. However, it seems like the organizational routines managed to get restored again with the help

of the knowing and skills of the former CFO. It is evident that even if a knowledge aspect was lost there seems to have been a learning aspect connected to the new 4PS system that Gothenburg continued to work with.

11.3.6 Concluding remarks

From the experiences of the three cases there are some recommendations to be drawn for other companies that outsource. It is important to consider that routines are connected to experienced employees that are bearer of tacit knowing necessary for the functioning of the routine. Also important for the discussion on how to lose or win through outsourcing is the development of the transfer of knowledge and learning and how to maintain the effectiveness of the remaining activities after outsourcing certain parts.

It is furthermore important to keep in mind that the managerial perception of how outsourcing is to be handled is of importance in discussing knowledge flows and the possibility to develop competencies together with subcontractors outside the boundaries of the organization.

Present study has largely been conducted in traditional hierarchical organizations, with cases in manufacturing and professional services industries. It would be of interest as a potential project to find new cases in other organizational forms that enable different kinds of motivation and capacities to generate and transfer knowledge (Osterloh and Frey, 2000). Scholars suggest that traditional structures do not respond effectively to new conditions of volatility and virtuality (Heckscher and Donnellon, 1994; Ciborra, 1996; Child and McGrath, 2001; Neff and Stark, 2003), where boundaries and meaning are fluid. It is of interest for the effectiveness of transforming the attributes of network resources, i.e., assets that are deployed by actors in direct or indirect relationship with the firm. The network-oriented dynamic capabilities as determinants of routines have largely remained unexplored (Teece, 2012; Alinaghian and Razmdoost, 2018).

Having visualized the importance that Sandvik Crushing and Screening dedicates to the mutual learning schools with subcontractors, the factual activities would be of a potential interest to study. How tacit knowing is transferred between parties would develop knowledge about tacit knowing (Philipson and Kjellström, 2019). There are studies about breakdown and obedience of organizational routines (Lazaric, 2011; D'Adderio, 2014) that would be possible to develop. If the routinization of ordinary working places is expanding, there must be knowledge to gain in those cognitive directions, where quite different methodology would be

necessary. A recent presentation by Baldessarelli (2018) explicitly recognizes the role of emotions expressed toward artifacts that adds to the growing body of research on the relationship between organizational routines and creativity.

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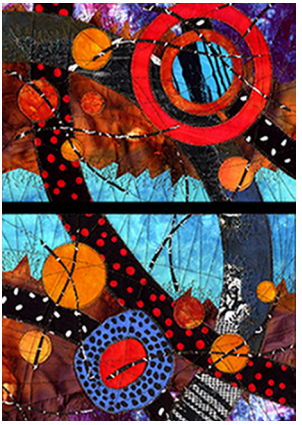
Outsourcing of Organizational Routines



This theoretical study analyzes the consequences of outsourcing and insourcing when organizational routines cross the boundaries of the business organization. Three different conventional industry cases illustrate the phenomenon of organizational routines and how boundaries of time and space are challenged both within and between organizations.

"Crossing Boundaries"
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