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Linköping University Post Print

N.B.: When citing this work, cite the original article.

Original Publication:

Lars Taxén , The Activity Domain Theory - Informing the Alignment of Business and Knowledge Strategies, 2008, Knowledge Management and Business Strategies, 253-280.

<http://dx.doi.org/10.4018/978-1-59904-486-6.ch012>

Postprint available at: Linköping University Electronic Press

<http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-41203>

The Activity Domain Theory – Informing the Alignment of Business and Knowledge Strategies

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Abstract

In this contribution, the Activity Domain Theory is introduced as a theoretical lens for guiding the alignment of business and knowledge strategies. Alignment is focused around the *activity domain*, which can be comprehended as a human workpractice where socially organized actors process a work object into a required outcome. An organization is seen as a constellation of activity domains, each providing a specific outcome. The products or services provided by the organization are realized by coordinating the domains. The main target for the business strategy is the constellation of activity domains. The target of the knowledge strategy is the knowledge needed to produce the outcome of each domain and the knowledge needed to coordinate the domains. In this way, the activity domain provides a common target for business and knowledge strategies. We argue that this approach makes it possible to operationalize an integrated alignment of business and knowledge strategies.

Key words: business strategy, knowledge management, alignment, coordination, Communities of Practice, activity domains, activity modalities, communal meaning.

INTRODUCTION

The importance of aligning business (B) and knowledge (K) strategiesⁱ is well-recognized (Abou-Zeid, this volume). In order to operationalize alignment, these strategies should be grounded in a common foundation from which general definitions or theories can be transformed into elements that can be manipulated, measured or observed in practical situations. In particular, such a foundation must consider the socio-technical nature of alignment (Tuomi, 2002). By this we mean that the social and technological context in which alignment takes place, must be taken into account.

The purpose of this contribution is to investigate alignment based on the *Activity Domain Theory* (ADT) (Taxén, 2003; 2004; 2005a; 2005b; 2006). The ADT matured from a long term effort to comprehend and inform the coordination of large, extraordinary complex system development projects at Ericsson, a major supplier of telecommunication equipments worldwide. In particular, the theory addresses the construction of shared, or communal, meaning about how coordination should be conceived.

The roots of ADT are found in the notion of praxis (Kosík, 1976; Israel, 1979) and activity theory (e.g. Engeström, 1999), which implies that ADT is a contribution to the discourse that considers the *practice* as the nexus of human activity (Schatzki, 2001). A practice is conceived of as "embodied, materially mediated arrays of human activity centrally organized around shared practical understanding." (p. 2). According to practice theory, the human mind is "at least to a significant extent 'constituted' within practices. However much the contents and properties that compose and define mind have biophysical sources and continuous neurophysiological underpinnings, they depend, both causally and ontologically, on participation in social practices." (p. 11). This point is also iterated by Orlikowski (2002), who suggests that knowing is constituted and reconstituted as individuals engage the world in purposeful, everyday practice. Hence, we claim that the practice is a suitable point of departure for integra-

tive socio-technical approaches that regard individual, technological and social aspects of human activity as highly interrelated.

Taking the practice as the unit of analysis makes it possible to conceive of a common target for aligning B and K strategies. In ADT, this target is provided by the *activity domain*, which can be comprehended as a practice where socially organized actors process a work object into an outcome fulfilling certain social needs. Such practices have been called workpractices (Goldkuhl & Röstlinger, 2003). An organization is seen as a constellation of activity domains, each providing a specific outcome needed to produce the products or services that the organization offers. Thus, the activity domain provides an intermediate, shielding construct between the daily practice of each individual actor and the organization as a whole.

The outcome of the organization is achieved by coordinating the outcomes of the activity domains. Consequently, a main target for the B strategy is the constellation and coordination of the activity domains. The target of the K strategy is two-fold. First, in each activity domain, the nature of the work object determines the kind of knowledge needed in order to produce the outcome. Thus, the K strategy should address how to achieve this knowledge. Second, this strategy should attend to the knowledge needed to coordinate the outcomes of the domains.

In this contribution we shall inquire into this line of thought. The outline is as follows. In the first section (Reconstruction of strategy alignment) we reconstruct our understanding of the B/K alignment discourse in order to position our contribution relative to this discourse. In the next section (Positions taken) our stances on knowledge in relation to the individual and the organization are outlined. The point of departure is the concept of *meaning*, which is seen as the foundation for all aspects of knowledge. By analyzing various facets of meaning, we suggest that knowledge is situated, located in the individual, and constructed in social interaction in practices. Moreover, we assume that manifestations of activity in the human mind and in the practice are in some sense *congruent*. The phylogenetic constitution of humans is reflected in our constructed social reality, which in turn is reflected in the ontogenetic constitution of the individual in a particular practice. For example, the ability to learn a language is a result of the phylogenetic evolution of man, while the ontogenetic acquisition of a particular language by an individual is determined by the historical and cultural context in which the individual is immersed.

The section is concluded with a discussion of knowledge in organizations. We introduce the concept of ‘activity’ as it is understood in the Russian Theory of Activity (Bedny & Meister, 1997; Engeström, 1999) in order to understand the specific nature of knowledge in organizations.

In the following section (The Activity Domain Theory), a general view on human activity is elaborated. We propose that the construction of the human mind and the socio-technical reality in activity domains proceed along certain dimensions called *activity modalities*. These modalities denote fundamental human capabilities to coordinate actions. For example, the innate capacity of humans to separate spatial dimensions from temporal ones is apprehended in ADT as two distinct, albeit dialectically related activity modalities: spatialization and temporalization. The congruence principle enables us to operationalize the construction of meaning concerning coordination by manipulating tangible manifestations of the activity modalities.

At this point, we are in a position to discuss the alignment of B/K strategies as seen from the ADT perspective (Aligning Business and Knowledge strategies). In this section, we also compare our approach to some other alignment approaches found in the literature. In the next section (Discussion) we examine some implications of our approach. In particular we address the issues stated by Abou-Zeid (editor’s preface, this volume):

- How to model the relationship between an organization's competitive B strategy and its K strategies?
- How to align K strategies with the organization's competitive B strategy, i.e., the dynamics of alignment?
- What are enablers and inhibitors of B and K strategies alignment?
- What are the roles of top/middle managers in alignment process?
- What are the impacts of culture (organizational and national) on alignment process?

The implications should be regarded as opportunities for further research rather than elaborated and decisive results. Our main conclusion is that the ADT provides a promising approach towards informing the alignment of B and K strategies that may open up hitherto untrodden paths of research.

RECONSTRUCTION OF STRATEGY ALIGNMENT

In order to position our approach we will reconstruct our understanding of the B/K strategy alignment discourse. A suitable point of departure is provided by Tuomi (2002), who states that the sources of knowledge management (KM) can be separated into four intertwined clusters. The first one, *organizational information processing*, has its roots in the Artificial Intelligence community and is concerned with building corporate-wide information systems and expert systems. The core idea is that knowledge can be stored and shared with the help of computer systems. In this cluster, technology is in focus.

In the next cluster, *business intelligence*, the focus is on categorizing, searching and distributing information that is considered vital for the business. Knowledge sharing is a prime task for corporate librarians and intelligence professionals. This task is facilitated by the access to large databases and the Internet. However, information overload is an issue. This in turn brings the relevance of the information to the foreground. Ultimately, the problem of knowledge representation is reduced to the idea that "all knowledge can be represented as documents and associations between them." (Tuomi, 2002, +p. 5). Making sense of the information is left to the reader.

In the third cluster, *organizational cognition*, organizational sense-making and the active process of knowledge construction are emphasized. The focus is on the effective use of human experts and the establishment of social and communicative networks. A more interpretationistic approach towards knowledge is taken where tacit and situated knowledge are highlighted.

The fourth cluster, *organizational development*, brings knowledge and social action to the foreground. The concept of the 'learning organization' is coined and the knowledge creation process becomes subject to management. In this cluster, KM is linked to the B strategy, that is, the KM strategy is turned into a K strategy. Resource-based strategies, including analysis of competitive strengths and weaknesses, evolve to competence-based strategies. Knowledge is considered an asset in the balance sheet, and intellectual property is protected. The strategic needs of the organization are linked to the aggregation of individual skills by human resource (HR) management initiatives. The basic idea is to identify and fill in gaps in knowledge in order to execute the B strategy, which in turn is grounded in organizational sciences. Thus, the HR department becomes the link between K and B strategies as illustrated in Figure 1:

Figure 1: The linking of K and B strategies

The clusters described emerged more or less sequentially between 1993-1996. Tuomi (2002) calls this period the ‘first generation of KM’. It is characterized by its focus on information sharing, repositories and intellectual capital management. In the second period, which started around 1997, companies include KM as part of their everyday organizational discourse. Specific KM positions and departments are established. Issues of tacit knowledge, social learning, situated and embedded knowledge, and communities of practice are in focus (p. 10).

Tuomi maintains that the first and second generations of KM will remain vital. A third generation of KM will in addition emphasize the role of information systems as support for knowledge construction and human sense-making. Knowledge will be viewed from a constructivistic and pragmatic perspective. The action character of knowledge will be in focus as well as social aspects of knowledge. This will require a better understanding of the cultural basis of knowledge.

The ADT is an attempt to contribute to such an understanding. The HR initiative tried to link individual knowledge directly to the organization’s strategical needs. In our opinion, this is a dead end since the workpractice basis of knowledge is overlooked. As an alternative, we suggest that the link between the B and K strategies should be the activity domain. In the following, we shall elaborate on this idea.

POSITIONS TAKEN

The alignment of B and KM strategies is indeed a challenging task that is aggravated by the problems of defining knowledge in general and organizational knowledge in particular. This makes it necessary to be specific about our positions in these areas.

Before we develop these positions we need some basic definitions of business strategy, knowledge strategy and alignment. According to Porter, activities are the basic units of competitive advantage (Porter, 1996). Strategic positioning means “performing *different* activities from rivals’ or performing similar activities in *different ways*.” (p. 62, italics in original). From this follows that “strategy is the creation of a unique and valuable position, involving a different set of activities.” (p. 68).

Business strategy has been defined as "the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals" (Chandler, 1966, p. 16). A business strategy is unique to an organization, sometimes unique in time, and always shaped by the cultural values of the stake-holders, constituencies, the communities the organization serves, and by marketplace considerations (Bishoff & Allen, 2004).

A *knowledge strategy* is a plan that describes how an organization will manage its knowledge better for the benefit of the organization and its stakeholders. A good knowledge strategy is closely aligned with the organization's overall strategy and objectives. According to Zack (1999), a "knowledge strategy [...] describes the overall approach an organization intends to take to align its knowledge resources and capabilities to the intellectual requirements of its [business] strategy." (p. 135). This strategy "can be thought of as balancing knowledge-based resources and capabilities to the knowledge required for providing products or services in ways superior to those of competitors." (p. 131). In order to become operational, the strategy must be translated into an organizational and technological architecture to support knowledge creation, management, and utilization processes for closing those gaps (p. 142). In doing so, firms need some model, which "strategically guide their knowledge management efforts, bolstering their knowledge advantages and reducing their knowledge weaknesses." (p. 131).

Alignment can be seen as the efforts of an organization to balance different stakeholder needs in order to survive in a changing environment (Regev & Wegmann, 2004). However, alignment, or fit, is an imprecise concept. According to Knoll & Jarvenpaa (1994), alignment has several dimensions such as the number of components involved, external vs. internal alignment and static vs. dynamic alignment. In addition, Regev & Wegmann (1994) state that alignment is a point of view. Hence, people are likely to disagree on the meaning of alignment. This situation is further aggravated due to vagueness in central concepts like business goal, business structure, and informal organization structure (Chan, 2002). Chan (ibid.) sees alignment as consisting of "simultaneous component alignments that bring together an organization's structure, strategy, and culture at multiple (IT, business unit, and corporate) levels, with all their inherent demands." (p. 99). We shall adopt this view of alignment since it goes well with the activity domain construct.

The Point of Departure – Meaning

"Download knowledge directly to the brain! Today the actual learning process takes too long. In the future we will download knowledge directly to the brain. Connect in to something which contains specific know how and transfer it over." (Framed statement hanging on the wall at Corporate IT, Ericsson, July 2000)

Many different characterizations of knowledge have been suggested in the KM discourse (e.g. Blumentritt & Johnston, 1999). Most of these state that knowledge can be encoded or embedded in artefacts such as, for example, books and symbols. Often, a distinction is drawn between codified knowledge and personal knowledge (e.g. Hansen et. al., 1999; Dennis & Vessey, 2005). Codified knowledge is formally identified, coded and stored in a KM system.

We challenge this view of knowledge as being too shallow for grounding an integrated approach towards alignment. There is a need to distinguish between data, information and competence (Mathiassen, 1996). The concepts of data and information emphasize the difference between formal representation of information (to be processed by, for example a KM system) and interpretation of representations (being performed by human beings). The concepts of information and competence clarify the difference between, on the one hand, knowing and be-

ing able to explicitly describe, and, on the other hand, doing and being able to perform (p. 128). “Competence [is] a situated knowing constituted by a person acting in a particular setting and engaging aspects of the self, the body, and the physical and social worlds.” (Orlikowski, 2002, p. 252). Thus, an intrinsic aspect of knowledge is its anchoring in the individual. There is no knowledge without someone knowing it (Fahey & Prusak, 1998). However, this is not the whole story.

We suggest that the underlying concept for integrating data, information and competence is *meaning*. Only meaningful sensory impression can be informative and acted upon. Meaning has been proposed as fundamental for understanding the human mind. For example, Bruner (1990) suggests that “[T]he central concept of a human psychology is meaning and the processes and transactions involved in the construction of meanings.” (p. 33). Meaning is intrinsically related to culture and human action:

“[C]ulture and the quest for meaning within culture are the proper causes of human action. The biological substrate, the so-called universals of human nature, is not a cause of action but, at most, a constraint upon it or a condition for it.” (p. 20)

Through interaction with its environment, the individual gradually constructs a meaningful world ranging from the meaning of near-sensory impressions to, in due time, abstract symbols in a specific culture. Each individual acquires her own, particular understanding of the world. This understanding is located in the mind and body of the individual. Thus, on the one hand, meaning is idiosyncratic. On the other hand, meaning is inherently social. In order to construct meaning, an individual needs to interact with her social and physical environment, including other individuals:

“Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (*interpsychological*), and then inside the child (*intrapsychological*).” (Vygotsky, 1978, p. 57, italics in original).

Thus, meaning has a dual nature. The mediator between the social and individual aspects is the sign. The sign bridges internal, mental processes and external physical and social reality:

“By its very existential nature, the subjective psyche is to be localized somewhere between the organism and the outside world, on the borderline separating these two spheres of reality. [...] the organism and the outside world meet here in the sign.” (Vološinov, 1986, p. 26).

In the Russian theory of activity, the difference between subjective, personal ‘sense’ and objective ‘meaning’ is central (Leont’ev, 1978). Objective meaning refers to the meaning of a word given in a dictionary. This meaning is “independent of any particular individual and is thus trans-individual, but [it] exist only through the activity and reason of individuals” (Kosík 1976, p. 146).

In the literature, it is common to describe objective meaning as ‘shared’. However, from the discussion above it is clear that meaning cannot be shared in the same sense as two individuals share, for example, an apartment. This has also been pointed out by Boland (1996) and Walsham (2005). Hence, the term ‘communal’, with its connotations of contextuality and social action, appears to be more appropriate: “By virtue of [its] actualization in culture, meaning achieves a form that is public and communal rather than private and autistic.” (Bruner, 1990, p. 33).

The social foundation of meaning implies that meaning is historically and culturally dependent. Different meanings evolve in different cultures separated in time and space. The interactions between individuals in a particular society bring about a communal meaning that

stabilizes the social system:

“All social interaction is situated interaction - situated in time and space. It can be understood as the fitful yet routinised occurrence of encounters, fading away in time and space, yet constantly reconstituted within different areas of time-space. The regular or routine features of encounters, in time as well as space, represent institutionalized features of social systems.” (Giddens, 1984, p. 86, in Rose & Scheepers, 2001, p. 221).

Signification occurs through physical stimuli picked up by sensory organs in various modalities such as sight, sound, taste, smell, and touch. Everything that possesses meaning is ultimately physical in origin. The sign is a material phenomenon:

“Signs [...] are particular, material things; and [...] any item of nature, technology or consumption can become a sign, acquiring in the process a meaning that goes beyond its given particularity. A sign does not simply exist as part of a reality - it reflects and refracts another reality” (Vološinov, 1986, p. 10)

In summary, meaning integrates individual, social and technological / material aspects of social reality. Knowledge is acquired through social interaction in which physical sensory impressions become meaningful in a certain situated and historical context. Thus, meaning and knowledge have a dualistic and multi-faceted nature (Hildreth & Kimble, 2002; Blackler, 1995). It is embodied in the individual mind and body and reflected in the artefacts and symbols that emerge as meaningful in a culture. Moreover, meaning is simultaneously idiosyncratic and communal, mediated by signs that relate the external physical and social reality with the psychological reality in the minds of human beings. Human social reality is a reality where processes of semiosis are inseparably intertwined with material processes:

“Semiotic formations [...] are essential elements in the material dynamics of human communities, and this material-semiotic coupling is reciprocal. There cannot be two systems here, changing according to separate laws, relatively independent of one another. There can be only one unitary ecosocial system, material and semiotic, with a single unified dynamics, described under two aspects, by two different sorts of culture-specific discourses.” (Lemke, 1993).

The Congruence of Mind and Activity

The dualistic nature of meaning is still being discussed among scholars (e.g. Zinchenko, 2001). Usually, this discussion is framed in terms of internalization and externalization. In object-related activity, the human mind is externalized into the objectified social world, which in turn is internalized into the consciousness in the course of socialization (Berger & Luckmann, 1991). However, in this discourse the idea that the human mind does not have its own structure and logic of development, distinct from the structure of object-related activity, has been lost (Stetsenko, 1999, p. 246). According to Zinchenko (2001), we should assume that “what is considered mental, or subjective, is objective at the same time” (p. 138). The mind, just like culture, does not have its own enclosed territory, but is “situated instead at the borders between own and not-own” (p. 139).

The consequence of this position is that the structure of communal meaning in the human mind will develop in congruence with the structure of object-related activity. In a superficial way, this is quite obvious. Cars, trains, buildings, books or whatever artifacts constructed, are all adapted to the measures of human. This is valid also for symbols like the alphabet, traffic signals and the like. Conversely, only physical stimuli accessible by our sensory organs can become meaningful. Stimuli not directly accessible by human senses, for example, ultraviolet light and high-pitch sounds, are made meaningful only through some translation and pro-

cessing.

The congruence principle implies that two forms of objectivizing are constructed in human activity. The transformation of the world into artifacts such as tools, institutions and organizations is *objectification* ('Vergegenständlichung') (Kosík, 1976). This process is dialectically intertwined with a process where the individual is integrated in a trans-individual whole as one of its elements: "The subject abstracts from his subjectivity and becomes an object and an element of the system" (p. 50). This second form of objectivizing is *objectivation* ('Objektivierung') (p. 131). The essence of objectivation is the appropriation of communal meaning necessary to perform coordinated actions.

We can exemplify the objectification – objectivation process with the activity of playing in an ensemble. First, there are obvious objectified elements involved, like the instruments and the musical score. Each individual actor / player has to appropriate her instrument by a long and intense interaction with it. Technical and musical abilities must be learned. However, in order to bring forth music the musicians cannot act one by one. They have to appropriate a communal meaning of context-relevant elements such as, for example, scores, notes, tuning procedures and performance manners. In short, they have to be integrated in a trans-individual whole – the activity of playing – where they start playing at the same time, use the same phrasing and dynamics, and so on. Without going through this objectivation process, the musicians cannot coordinate their actions.

The Organizational Context

In the literature organizational knowledge is often discussed in anthropocentric terms. Organizational knowledge is apprehended as similar to, yet different from human knowledge. This view can be traced in expressions like organizational knowledge, organizational memory, organizational cognitive structures (Nicolini & Meznar, 1995), and the like. At the extreme, organizations are conceived as living entities (Hall, 2005; Örténblad, 2005). We reject this understanding of organizations.

From our point of view, organizations are specific forms of human, situated activity where the positions stated in the previous sections remain valid. The main distinguishing element is that organizations are intentionally created to fulfill social needs. As a consequence, knowledge in organizations is used for productive purposes in a certain context. The primary role of the firm is in the "application of existing knowledge to the production of goods and services." (Grant, 1996, p.112). This position is also emphasized by Burstein & Linger (2003), who maintains that knowledge must be seen in relation to the task at hand.

Ultimately, all differences between companies in cost or price derive from the hundreds of activities required to create, produce, sell, and deliver their products or services, such as calling on customers, assembling final products, and training employees (Porter, 1996, p. 62). These activities need to be coordinated, regardless of whether they reside inside or outside the organization. Thus, core knowledge in an organization concerns the coordination of a certain constellation of units, some of which are part of the organization and others are not. This point is strongly emphasized by Grant (1996), who maintains that the firm should be conceptualized as an institution for integrating knowledge by coordinating the efforts of individual specialists possessing different types of knowledge. This coordination can only be carried out if a certain degree of communal meaning concerning the coordination is achieved.

In order to ground these general observations theoretically, we will make use of the concept of 'activity' in the Russian theory of activity (Bedny & Meistner, 1997). An activity ('*deyatelnost'* in Russian) has a very specific meaning in this theory. It is defined as "a coherent system of internal mental processes, external behavior, and motivational processes that are

combined and directed to achieve conscious goals.” (p. 3). The activity frames the social context within which individual actions are meaningful. For example, the action of a beater to drive wild game away is meaningful only in the activity of socially organized hunting.

The existence of an activity is motivated by the transformation of a *work object* into an outcome fulfilling a social need. The work object is the key element that defines the activity and separates activities from each other. Work objects can be material or intangible things as long as they can be shared for manipulation and transformation by the participants of the activity (Virkkunen & Kuutti, 2000, p. 301). In what follows, we will use the activity as the basis for the further theoretical elaboration in the next section. In this respect, our approach differs from that of Grant (1996), who emphasizes the integration of *individual*, specialized knowledge: “Given the efficiency gains of specialization, the fundamental task of organization is to coordinate the efforts of many specialists.” (p. 113).

To summarize, our position on organizational knowledge is that such knowledge is, in principle, not different from knowledge in general. By working in an organized manner, a communal meaning is constructed concerning the actions needed to produce the outcome. This meaning is acquired in the interaction between actors and meaningful artifacts in the context of the organization. A similar position has been advocated by Orlikowski (2002) who uses ‘organizational knowing’ instead of ‘organizational knowledge’ to emphasize that knowing is enacted in practice:

“Knowledgeability or knowing-in-practice is continually enacted through people’s everyday activity; it does not exist “out there” (incorporated in external objects, routines, or systems) or “in here” (inscribed in human brains, bodies, or communities). Rather, knowing is an ongoing social accomplishment, constituted and reconstituted in everyday practice.” (Orlikowski, 2002, p. 252)

The coordination of actions is taking place both within the activity and between activities. Accordingly, we can identify two aspects of knowledge that may be subject to management. The first aspect concerns the knowledge needed to produce the outcome of a certain activity. The second aspect concerns the knowledge needed to coordinate the outcomes of these activities. Thus, in line with Fahey & Prusak (1998), we suggest that the target of knowledge strategies should be the construction of a certain degree of communal meaning of an organization's external and internal worlds and how these worlds are connected.

THE ACTIVITY DOMAIN THEORY

The Activity Domain Theory (ADT) originated in the development practice of Ericsson, where it influenced and was influenced by the activity to coordinate large, extraordinary complex system development projects (Taxén, 2003; 2004; 2005a; 2005b; 2006). Thus, ADT is empirically rooted in a concrete practical setting. Its philosophical and theoretical roots are found in the notion of praxis (Kosík, 1976; Israel, 1979) and the Russian theory of Activity (Bedny & Meister, 1997; Engeström, 1999). The focus of ADT is the construction of communal meaning concerning coordination, which turned out to be a major issue in the Ericsson practice. From the outset, an ambition with ADT has been to provide an operationalizable theoretical foundation that can be efficiently applied to demanding coordination tasks.

The central construct in ADT is the *activity domain*, which can be conceived of as an activity structured from a coordination point of view. From activity theory, ADT has appropriated the notions of the work object and the motive as the main drivers of the constitution of the domain. The praxis perspective emphasizes certain qualities of human activity such as historicity, cultural specificity, and dialectical interaction. The activity domain is considered to be in constant motion and development. Through the emergence and resolution of inner contra-

dictions, the structure of the activity domain evolves to meet new needs. In ADT, we strive to maintain these qualities while simultaneously giving praxis a structure that is suitable for analytical and constructive purposes related to coordination.

Since we assume that one premise for the meaning construction process is the biological ‘substrate’ brought about during the phylogenetic evolution of mankind, we may hypothesize that manifestations of this process are in some sense trans-situational. In other words, regardless of the particular motive and work object of an activity domain, certain regular features should prevail between different domains. An indication of such features is provided by the empirical observations from the Ericsson development practice (Taxén, 2003). The analysis of these observations indicates that the evolution of activity domains proceeds along certain, dialectically interdependent dimensions, which have been coined *activity modalities* in ADT. As the name indicates, these modalities should be seen as fundamental dimensions of human socially organized activity. These dimensions are, at least to some extent, determined by the biological constitution of human beings.

What does this mean? For example, one activity modality is *temporalization*. The construction of communal meaning in this modality is manifested as objectified artifacts such as, for example, business process models. These signify a temporal dimension of activity. To become effective in the organization, the actors must acquire communal meaning about how to interpret and make use of these models. This meaning is manifested as objectivated elements in the minds of the actors. Thus, the construction of a coordinating instrument in any modality implies two types of results – a tangible, objectified result in the domain and an intangible, objectivated result in the minds of the actors.

In Figure 2, a model of the activity domain is depicted. In the text that follows, we describe this model in detail.

Figure 2. A model of the activity domain

The existence of the *activity domain* is *motivated* by some social *need*. This need is fulfilled by the modification of a *work object* by socially organized *actors* into an *outcome*. The work object and the motive are the key elements that define the domain and separate different do-

mains from each other. The outcome may be the *prerequisite* for the other domains. This means that the activity domain construct is recursive. The same structure applies to all activity domains.

The activity domain is constituted through the actions of the actors along the activity modalities. These modalities are manifested as *objectified*, tangible elements in the activity domain, and intangible, *objectivated* elements in the human minds of the actors. In the analysis of the empirical results from Ericsson, the following activity modalities were found to be particularly important for coordination (Taxén, 2003):

- *Spatialization* manifests a spatial framing that enables the actors to acquire a communal meaning of what entities are relevant, how these entities should be characterized and related to each other, and in what state or condition they are. Examples of organizational manifestations of spatialization are information models, product structures, and conceptual models. Spatialization can refer both to direct, physical objects or signs signifying such objects. For example, both a map of a city and the city itself are examples of spatialization.
- *Temporalization* manifests a temporal framing that enables the actors to acquire a communal meaning about actions and the dependencies between them. In this sense, manifestations of temporality are coordinating elements according to the definition given by Malone & Crowston (1994): “Coordination is managing dependencies between tions]ⁱⁱ.” (p. 90). Examples of organizational manifestations of temporalization are business process models, interaction diagrams, and use cases.
- *Stabilization* manifests stability in the domain as provided by, for example, norms, values, habits, routines, rules, standards, and domain specific languages. Without stabilizing elements, coordination is impossible. Such elements have the function of “... reducing the infinite number of things in the world, potential or actual — to a moderate number of well-defined varieties” (March & Simon, 1958, p. 181). Together, the stabilizing elements constitute an *ideology*, that is, a wide-ranging system of belief or thought. Some elements of the ideology may be common to several domains, but in general, these elements vary between domains. Organizational manifestations of stabilization are, for example, naming conventions, business rules, and standards.
- *Mediation* manifests resources by which actions are accomplished. ‘Mediation’, which can be material and semiotic in nature, is a key concept in activity theory (e.g. Susi, 2006), and refer to the idea that humans always put something between themselves and their work object. Organizational manifestations of mediation are, for example, information systems, mail systems and financial resources.
- *Contextualization* manifests a contextual framing of human activity. In ADT, framing is mainly determined by the motive of the domain. A capability to contextualize appears to be innate in humans. For example, our visual system simplifies a visual scene into a figure attended in the foreground and other things unattended in the background (Jackendoff, 1983, p. 42). Contextualization implies that meaning is context dependent. This means that same object will be characterized differently depending on the motive of the domain. For example, a product will be described differently in the contexts of marketing, development and production. Organizational manifestations of contextualization are, for example, organizational units, teams, and projects.

- **Transition.** In general, activity domains have to interact in order to fulfill a certain need. Since communal meaning differs between domains, a particular outcome from one domain may be characterized differently in other domains. Transitional elements provide a mapping and translation between meanings that enables the actors to cooperate. Organizational manifestations of transitional elements are, for example, interface specifications and dictionaries for translating between organization specific languages such as product identification conventions. The coordination of a constellation of activity domains is enabled by the transition modality.

Operationalization of Meaning Construction

According to ADT, the activity modalities are manifested both in the domain and the minds of the actors. Both these aspects must be considered in the operationalisation of the theory. This is done by identifying objectified elements of the modalities, and using these in a process for constructing objectivated, communal meaning concerning these elements.

In general, modality manifestations are signified by models and artifacts corresponding to each modality (Taxén, 2003). For example, spatialization can be manifested as *spatial domain models* realized by OMT diagrams (Object Modeling Technique, Rumbaugh et al., 1991). In order to alleviate the construction of communal meaning, the nomenclature in the model should be easily comprehended by the actors. An example of a spatial domain model is given in Figure 3.

Figure 3. Spatial domain model from Ericsson (1998)

The figure shows entities (square boxes) and relations between these (arrowed lines). Attributes may be used to characterize entities (bottom part of the boxes) and relations. State set names, indicating the states a certain entity can take, are given within {} brackets. Class relationships (*is_a*) are signified by dotted lines. Finally, rules for managing relations when an

entity is revised, are given in the legend in the upper right corner. All in one, approximately six hundred items are specified in the model. This model, as well as other models corresponding to other modalities is implemented in an information system.

In order to construct a communal meaning about models like the one in Figure 3, which is indeed a formidable task, a *domain construction process* has been suggested in ADT. As the name indicates, the gist of this process is in fact the construction of the entire activity domain, including communal meaning and meaningful artifacts. The process, which is based on an experiential learning approach (Kolb, 1984), is carried out in three phases: the *mathetic*, *consolidation* and *pragmatic* ones (see Figure 4).

The terms mathetic and pragmatic are adopted from Halliday (1975), who distinguishes between pragmatic and mathetic functions of language. Pragmatic functions involve coordination of actions when a communal meaning is established, while mathetic functions have to do with the construction of communal meanings. The gist of the process is an ongoing iteration between reflection and action, resulting in a communal meaning being gradually established among the actors. In this process, a gradual shift is made from the mathetic to the pragmatic functions of language.

Figure 4: The construction of communal meaning

The purpose of each phase is as follows:

- *Mathetic*: In this phase, the initial construction of the domain is carried out. The main purpose is to achieve a tentative domain structure in terms of a communal meaning and corresponding objectified artifacts such as domain models and their implementation in the information system. The work is carried out in a ‘daily build’ manner by a small ‘task force’. Provisionary domain models, rules, etc., are suggested and implemented in the information system. The results are discussed and evaluated with respect to usefulness. Changes are suggested to the domain models and implemented anew in the information system. In this way a communal meaning is gradually constructed. The iteration is continued until a working consensus is achieved. The focus in this phase is on the mathetic function of language.
- *Consolidation*: The purpose of this phase is to boost the trust about the feasibility of the domain as constructed in the mathetic phase. Key issues are getting all actors to trust the data in the information system. This may be done in an on-going development project,

that is, a project that develops a product for a customer. The task force is still driving the construction. Additional user roles around the project are involved and immediate, personalized support is provided. The construction of the domain in the consolidation phase progresses by controlled changes. No major reconstruction of the domain is allowed at this stage.

- *Pragmatic*: In this phase, actors in several projects may be included in the domain. As in the consolidation phase, the construction is done by controlled changes, however now in a formalized way. The domain may also be expanded to include new types of coordination entities. The focus in this phase is on the pragmatic function of language.

This process was applied successfully at Ericsson (Taxén, 2003). To summarize, the result of the domain construction process is an activity domain that produces a certain outcome needed by an organization. The construction of the domain includes both objectified elements such as models and tools, and objectivated communal meaning among the actors concerning these elements.

ALIGNING BUSINESS AND KNOWLEDGE STRATEGIES

In this section, we examine some aspects of B/K strategy alignment that are brought to the fore by the ADT perspective.

B strategy focus

The activity domain view of the organization suggests that a main target of the B strategy should be the constellation and coordination of activity domains. It is beyond the scope of this contribution to discuss coordination in detail (see e.g. Mintzberg, 1983; Larsson, 1990; Malone & Crowston, 1994). However, a key point in ADT is that all modalities as well as their interdependencies are involved in the coordination. Some of the issues that need to be considered are:

- *The constellation of activity domains*: Which domains are needed to fulfill the strategic intents of the organization?
- *Business level coordination*: How are the activity domains coordinated from the top-level domain, that is, the organization itself? In general, this coordination is signified by a business process model. How should this model be expressed in order to enhance the construction of communal meaning about it? A discussion of this issue is found in Taxén & Svensson (2005).
- *Internal or external*: Which domains should remain within the control of the business, that is, internal to the organization? Which ones should be external? Should we out-source or in-source some domains?
- *Transitions between activity domains*: Are there business critical transitions between activity domains? How should these be managed? For example, an organization may choose to out-source the operation of its IT-platform to another organization. An issue that may appear in such a case is the translation between different organizational languages. Other issues concern the pragmatic functions of language. Which assignments, contracts, agreements, responsibilities, etc., are needed to regulate the cooperations between organizations?

- *Central versus local control*: Since each activity domain has a particular motive and produces a specific outcome, each domain is unique to some extent. However, the coordination of activity domains calls for some communal meaning across activity domains. This raises the question of maintaining an optimal balance between what is centrally controlled and what can be left to each domain to control locally. This balance affects all the activity modalities.
- *IT architecture*: How should the IT architecture of the organization be designed in order to support the coordination of activity domains?

K strategy focus

So far, most KM initiatives have taken as a point of departure the knowledge needed for an actor to carry out a certain task, for example, writing software code in C++. This is certainly valid also in our approach. However, with the introduction of the activity domain, individual actions are immersed in a social context where these actions make sense only in relation to the motive of the domain. Thus, the communal and situated aspects of individual knowledge are brought to the fore. This means that knowledge about how to coordinate individual actions becomes crucial. Based on these considerations, two focal areas for K strategies can be discerned: the knowledge needed to perform a certain action in order to transform the work object of the domain, and knowledge needed to coordinate such actions in the domain.

We suggest that K strategies for constructing and maintaining knowledge should be targeted to these focal areas. The management of transformational knowledge needs to be related to the motive and object of the activity domain. Actors in a domain producing printed circuit boards need very different kinds of knowledge as compared to actors in a domain producing software in C++. Strategies for constructing coordination knowledge should be based on the principles described in the section (Operationalization of Meaning Construction). In general, all activity modalities should be attended. In particular, the interdependencies between these modalities need to be managed as well as the transitions between activity domains.

Since the activity domain is a recursive construct, the entire organization is also regarded as an activity domain. In this sense, it is no different from other domains. The actors in this domain, for example, the CEO and his or hers steering group need to acquire the particular competences needed. Moreover, their actions need to be coordinated. Thus, the same two focal areas for K strategies apply also to this domain.

KM systems

The storing, distribution and retrieving of information in a KM system should be structured from an activity domain perspective. Some conceivable functions of such systems are:

- Listing activity domains and their characteristics, for example, their motives, what needs they fulfill, and what kinds of work objects are manipulated.
- Keeping track of the dependencies between activity domains.
- Matching activity domains with similar characteristics where actors with similar knowledge may be found.
- Listing individuals with expert knowledge related to a particular domain.

It has been noted that the predominant use of KM systems is to capture, store and transmit ‘commodified knowledge’ in the form of patents, documents, experiences, etc. (e.g. Hildreth & Kimble, 2002). From the ADT point of view, this kind of management concerns only the objectified manifestations of the activity in various activity domains. Thus, only one side of the dualistic nature of knowledge is managed. In order to manage the objectivation aspect, KM systems need to support the entire spectrum of meaning and knowledge implicit in the activity domain construct. This is in line with Tuomi when he suggests that:

“[I]nformation systems for knowledge management and organizational memory should be seen as media that is used as an interpersonal cognitive artifact. A critical factor in designing such artifacts is to consider those knowledge stocks that are needed to make sense of the information stored in the system.” (Tuomi, 1999, p. 9).

If two domains have similar motives and objects, the objectivated manifestations of activity modalities, that is, what is embodied in the minds of the actors will be similar. Communities of Practices (CoPs) (Wenger et al., 2002), consisting of actors from different domains, can be cultivated based on these considerations. In CoPs, actors can exchange experiences and look for solutions to similar problems.

It can also be noted that systems, which are used in manipulating the work object, for example, configuration management systems, contribute to the knowledge construction in the domain. They are an intrinsic part of the construction of the domain, and should be designed to facilitate the construction of communal meaning. This implies, for example, that the semi-otic aspects of such systems should be given a high priority when designed. The action character of cues, symbols, and help texts should be made as evident as possible.

Comparison with other Alignment Approaches

In this section we shall compare the ADT approach with some other alignment approaches reported in the literature. This comparison can only be superficial, given the width and depth of the subject area. We will use the following categories as reference:

- *Integrative perspective*: Is the approach based on an integrative socio-technical perspective?
- *Practice based*: Is there a practice construct akin to the activity domain in the approach?
- *Communal meaning*: Is the issue of shared or communal meaning salient?
- *Dualistic view of knowledge*: Is there a dialectical view on the construction of objectivated elements in the mind and objectified elements in the work context?
- *Emphasis on the work object*: Does the approach emphasize the work object as a focus for B/K strategy alignment?
- *Coordination*: Is coordination an essential theme in the approach?

Earl (2001) has made a thorough investigation of various approaches to KM. He reports on seven ‘schools’ of KM and suggests how these can be used as points of departures for alignment initiatives. These schools are related to the ADT approach as followsⁱⁱⁱ.

Systems school

Here, the purpose is to capture specialist knowledge. Domain specific knowledge is codified and stored in knowledge databases. Technical know-how is provided to those qualified to use

it. The KM systems have virtually the same role as information systems. Knowledge is generated from objective data and experience through practice.

In this school, there is a practice touch since the domain specificity of the knowledge is emphasized. The objectification aspect of the dualistic view of knowledge is in focus. However, there is less focus on the actual construction of knowledge.

Cartographic school

This school tries to map the knowledge of the organization: who in the organization knows what? This information is stored in knowledge directories, similar to the 'yellow pages' in a phone directory. The individual and tacit aspects of knowledge are communicated to other individuals. IT supports the connection of people.

The domain aspect is present in this school since individual knowledge acquired in one practice is supposed to be transferred to other, similar practices. The objectivation aspect of knowledge is emphasized.

Process school

In the process school contextual and best practice knowledge related to tasks are emphasized. Learning from experience is shared, based on similarity of tasks in key knowledge areas. Improvements made in particular practices are collected and distributed within the organization. The role of IT is the unrestricted provision of knowledge by shared data bases.

This school is related to the ADT approach in several ways. The constructive aspect of learning is emphasized. Contextual and best practice aspects as well as 'knowledge areas' are related to the activity domain construct. Moreover, different KM strategies are advocated, which is an indication of differentiation based on type of process or practice. It appears that the process school tries to 'balance' several of the activity modalities in ADT. However, the emphasis on process indicates that the temporalization modality is in focus.

Organizational school

The organizational school nurses knowledge communities in which participants can exchange and share knowledge interactively. This takes place outside their daily practice. The communities are organized as networks of domain specific knowledge across business units, sites, and countries. Groupware IT support is heavily employed.

This school is similar to the ADT approach in the sense that the community is in focus. However, in the knowledge community the work object in the activity domain is only indirectly present. The knowledge that is shared in a knowledge community has been constructed elsewhere, in the activity domain.

Strategic school

In the strategic school, knowledge is the key resource. KM is the essence of the B strategy. Intellectual capital and a learning organization are heavily stressed. Knowledge achieved through systems, processes, and people is converted into knowledge-based products or services. The domain specificity of knowledge is recognized as captured in the slogan 'multi-local, multi-national'.

As in ADT, the strategic school takes an integrative view of knowledge. Knowledge is needed in every practice and is situated in nature. However, in these practices, the work object is subdued in the focus on knowledge itself as the essence of the organization.

In Table 1 below we have made a qualitative mapping of the ADT approach to the schools above. More stars indicate a stronger relation.

Table 1: Mapping the ADT approach to KM schools according to Earl (2001)

	Systems	Cartographic	Process	Organizational	Strategic
Integrative			*		***
Practice	*	**	***	***	**
Meaning			*		
Objectification	***		**		
Objectivation		***	*		
Work object			**	*	
Coordination			*		

Although the mapping is indeed crude, some observations can be made. First, none of the schools can be directly mapped onto the categories of ADT. The process school is the one that has most in common with our approach. It seems that the various schools highlight one or several of the ADT categories. This may be a consequence of the fact that the schools are grounded in different views or ‘philosophies’ of knowledge (Earl, 2001, p. 217). Second, only the strategic school appears to take an integrative view of knowledge. However, the relation of knowledge to the organization’s competitive products or services is not salient. Third, the categories of meaning, work object, and coordination are by and large absent in the different schools.

Zack (1999) suggests that the link between K and B strategies has been widely ignored. There is a need for pragmatic and theoretically sound models that enable executives to relate the firm’s competitive strategy to capabilities and intellectual resources. According to Zack, a knowledge strategy should identify “which knowledge-based resources and capabilities are valuable, unique, and inimitable as well as how those resources and capabilities support the firm’s product and market.” (p. 131).

This position goes well with the ADT approach. The coordination of activity domains provides the products or services of the firm. By analyzing the knowledge needed to coordinate the outcomes and to produce the outcome of each individual activity domain, a strategy for knowledge management can be devised that matches the B strategy. In doing so the classification of knowledge into core, advanced and innovative knowledge suggested by Zack (1999) can be applied to each activity domain as well as to coordination knowledge. Moreover, Zack advocates that B and K strategies should be simultaneously aligned (p. 135). In ADT this is provided by targeting both strategies to the activity domain construct.

Abou-Zeid (2005) suggests a model for aligning B and K strategies based on the Henderson & Venkatraman (1993) Strategic Alignment Model for aligning IT to the B strategy. The K strategy is considered as a balance between external opportunities / threats and internal capabilities / arrangements. Three external dimensions are identified: *K-scope* (what the firm must know), *K-Systemic* (what are the critical characteristics of the required knowledge) and *K-Governance* (how to obtain the required K-competencies). The K-Scope is modeled as a business domain versus knowledge ‘things’ matrix in which each matrix element state the current / required state of knowledge of either a survival or advancement character.

Abou-Zeid is not specific about the nature of the business domains. However, if these are regarded as activity domains, there exists a straight-forward mapping between the K-scope matrix and the ADT approach. Each activity domain corresponds to a row in the matrix. Thus,

a knowledge characterization for the K-scope dimension can be related to each activity domain. Whether the other external dimension, as well as internal dimensions of knowledge, can be related to the ADT approach require an extensive analysis that is outside the scope of this contribution.

DISCUSSION

The gist of the ADT approach towards alignment is the introduction of the activity domain as a common target for B and K strategies. In essence, we have replaced the HR department with the activity domain as the mediator between these strategies. Moreover, we suggest that meaning is a proper point of departure for knowledge and organizational discourses (see Figure 5). In this section we shall discuss some consequences of this way of addressing the alignment problem.

Figure 5. The mediating role of the activity domain

The practice turn in KM

A practice based approach has been suggested in several recent contributions to the KM discourse (e.g. Brown & Duguid, 1991; Gherardi, 2000; Tuomi, 2002; Hildreth & Kimble, 2002; Peltonen & Lämsä, 2004; Gorelick & Tantawy-Monsou, 2005). The reason for the interest in the practice is a growing discontent with the disentangled views of knowledge as either a commodity or residing in the head of individuals.

In order to overcome this dilemma, many contributions suggest a Community of Practice (CoP) approach (Wenger, 1998). A CoP is defined as (Wenger et al., 2002):

“A group of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (p. 4).

An example of a CoP is given by engineers who design a certain kind of electronic circuits called phase-lock loops. The “find it useful to compare designs regularly and to discuss the intricacies of their esoteric specialty.” (p. 4). Thus, a CoP is primarily a context outside the workpractice, where actors from workpractices with similar or identical work objects can share experiences and knowledge. As such, a CoP may become important in the K strategy as a mean to transfer knowledge.

However, in order to anchor the knowledge creation process in organizations, the work object is central (Grant, 1996; Burstein & Linger, 2003). The primacy of the work object is recognized in activity theory, and some contributions in the KM literature have exploited this line of inquiry (Blackler, 1995; Virkkunen & Kuutti, 2000). For example, Blackler states that “Central to activity theory is the idea that collective action is driven by the conceptions people have of the object of their activities” (Blackler, 1995, p. 1041). In line with this we argue that the work object, as determinant for the formation of the activity domain, is crucial for the alignment of B and K strategies.

An integrated view on knowledge

The grounding of knowledge in meaning makes it possible to integrate individual, social and technological aspects of human object-related activity. Based on this perspective we may re-interpret espoused concepts in the KM discourse as follows:

- *Commodification of knowledge, embedded knowledge*: the tendency to focus on objectified manifestations of activity.
- *Mentalistic view of knowledge*: The tendency to focus on objectivated elements in the mind.
- *Organizational memory*: The objectified manifestations (artifacts) of object-related activity. Since an organization can employ different types of activity domains, depending on the type of object, various types of organizational memory will exist in an organization.
- *Organizational learning*: The learning among actors that takes place in various activity domains in accordance with the overall motive of the organization.

Moreover, grounding knowledge in the concept of meaning makes it possible to address many of the problems found in existing KM practices. Fahey & Prusak (1998) listed “The Eleven Deadliest Sins of Knowledge Management”:

1. Not developing a working definition of knowledge.
2. Emphasizing knowledge stock to the detriment of knowledge flow.
3. Viewing knowledge as existing predominantly outside the heads of individuals.
4. Not understanding that a fundamental intermediate purpose of managing knowledge is to create shared context.
5. Paying little heed to the role and importance of tacit knowledge.
6. Disentangling knowledge from its uses.
7. Downplaying thinking and reasoning.
8. Focusing on the past and the present and not the future.
9. Failing to recognize the importance of experimentation.
10. Substituting technological contact for human interface.
11. Seeking to develop direct measures of knowledge.

Many of these points are attended to in the ADT approach. Point 1 – a working definition of knowledge is given in the section (The Point of Departure – Meaning). Points 2, 3, 7, and 9 – objectified (‘knowledge stock’) and objectivated (‘in the head’) manifestations are constructed in social interaction in the activity domain. This also implies that it is futile to develop measures of knowledge (point 11). Point 4 – meaning is intrinsically communal (‘shared’) as well as individual since it is achieved in social settings. Point 5 – tacit knowledge is appre-

hended as objectivated elements in the mind constructed in interaction. Point 6 – actions are directed to the work object, which means that knowledge is intrinsically bound to its uses.

In summary, we claim that grounding knowledge in meaning makes it possible to find an integrating view on individual, organizational and technological aspects of knowledge.

Directions of future research

The list of issues provided by Abou-Zeid (editor's preface, this volume) can be seen as research questions concerning the alignment of B and K strategies. From the ADT perspective, we may indicate some directions of future research as follows:

- *How to model the relationship between an organization's competitive B strategy and its K strategies?* We suggest that there is a need for constructs that mediate the actions of individuals with the multitude of different kinds of knowledge needed in large and possibly globally distributed organizations. In ADT, this mediating construct is the activity domain. Without such a construct the task of coordinating the specialist knowledge of individuals becomes overwhelming. Thus, the unit of analysis should be neither the individual, nor the organization, but some intermediate, practice oriented construct like the activity domain.
- *How to align K strategies with organization's competitive B strategy, i.e., the dynamics of alignment?* Again, we argue that the dynamics of alignment needs a practice oriented construct that mediates between the K and B strategies. Alignment implies that the constellation and coordination of activity domains must be rearranged to reflect changes in the organization's strategic positioning on the market. Some domains may become obsolete and others may have to be constructed. In this effort, the domain construction process provides guidelines of how to construct the new domains in such a way that both objectified elements (such as artifacts, tools, and institutions), and objectivated elements (communal meaning among actors about coordination of actions) are manifested according to the motive of the domain.
- *What are the enablers of B and K strategies alignment?* The indications from ADT in researching this question are as follows. A first enabler is to take the activity domain, or any similar practice based construct, as the main unit of analysis. Without such a unit the complexity of the analysis cannot be mastered. Next, an integrative perspective of knowledge is needed where objectivated ('in the head') and objectified ('commodified') forms of knowledge are seen as a dualistic unity. These forms of knowledge are constructed by actors working on a common work object. Thus, a second enabler is to emphasize the work object, that is, the target for the actions in the domain. A third enabler may be to bring coordination into the KM discourse as one way to relate B and K strategies.
- *What are the inhibitors of B and K strategies alignment?* Here, the ADT approach indicates that the main inhibitor of alignment is the disjoint views on knowledge represented by the commodification view and the mentalistic view. If this disentangled view persists, the fundamental dualism between objectified and objectivated forms of knowledge will remain unattended. This means that the dynamics of knowledge construction is not considered, which in turn implies that the full scope of alignment cannot be mastered.
- *What are the roles of top managers in alignment process?* Basing the alignment on some practice construct indicates that the organization must be envisaged as consisting of a

number of more or less independent units, the outcomes of which need to be coordinated. This implies that espoused views on organizations as a homogenous entity need to be revised. In this process, top management has a key role in ‘spreading the word’. Furthermore, top management is responsible for the implementation of the K and B strategies along the principles outlined in this contribution.

- *What are the roles of middle managers in alignment process?* A natural consequence from the ADT approach is that middle managers take on the responsibility for the activity domains. One side of this responsibility is directed towards the interior of the domain. The manager must secure that actors are knowledgeable in producing the outcome. This amounts to implementing the K strategy in the domain. The other side is externally oriented towards the coordination with other domains. As such the manager is involved in implementing the B strategy of the organization as a whole.
- *What are the impacts of culture (organizational and national) on alignment process?* Here, the indications from the ADT approach is that culture cannot be seen as a detached element that can be managed separately. On the contrary, culture is constituted by meaningful activity:

“Socially meaningful doings constitute cultures (social semiotic systems): [...] cultures are systems of interlinking, socially meaningful practices by which we make sense to and of others, not merely in explicit communication, but through all forms of socially meaningful action.” (Lemke, 1993).

Consequently, culture expressed as various communal meanings needs to somehow be reconciled if different domains shall be able to coordinate their work. An indication of how to research this issue is given by the transition modality in ADT. Manifestations of this modality signify ways that actors enact in order to coordinate domains harboring different communal meanings.

Limitations and future opportunities

The approach presented in this contribution is an attempt to address a major problem in alignment – how to operationalize an integrated B/K alignment strategy where individual, social and technological aspects are considered. The approach is based on openly declared positions with respect to knowledge and the nature of the organization. These positions may certainly be contested. However, given that they are accepted, our line of argumentation from the very basic concept of meaning to the operationalization of the B/K alignment strategy needs to be further articulated and grounded in both literature and empirical research.

This said and done, we claim that our approach indicates new directions for researching the B/K alignment problem. An integrative, socio-technical perspective of grounding knowledge is necessary. We suggest that meaning provides such a grounding. In addition, the organizational discourse needs to be grounded in some practice perspective where the coordination of different workpractices is emphasized. Such a perspective is provided by the activity domain.

CONCLUSIONS

We have proposed the Activity Domain Theory as a theoretical framework for informing the alignment of business and knowledge strategies. In this theory, the activity domain is seen as a mediator between these strategies. Thus, the elaboration of business and knowledge strategies as well as their alignment cannot be considered as separate tasks. On the contrary, these

tasks are highly interdependent. The suggested approach provides an integrating perspective on individual, organizational and technological aspects of knowledge, based on the concept of meaning. In this respect, the approach is well suited to address the so called third generation of knowledge management in which knowledge construction, tacit and situated knowledge, and a social understanding of technology are emphasized. However, the viability of our approach needs to be validated by future research. At best, the ADT provides a promising approach towards informing the alignment of B and K strategies that may open up hitherto untrodden paths of research.

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ⁱ In the literature ‘knowledge strategy’ is more or less used synonymously with ‘knowledge management strategy’. In this contribution, we refer to ‘knowledge strategy’ as a strategy that is strongly linked to the business strategy in order to emphasize knowledge as a strategic resource (Zack, 1999). By ‘knowledge management strategy’ we indicate strategies for managing knowledge without a direct coupling to the business strategy.

ⁱⁱ Malone & Crowston use the word ‘activities’. We have replaced this with ‘actions’ to avoid confusion with our use of ‘activity’.

ⁱⁱⁱ We have excluded the commercial and spatial schools since these are less relevant for our comparison.