CHAPTER 1

MANAGING ORGANIZATIONAL KNOWLEDGE NETWORKS IN A PROFESSIONAL SERVICES FIRM:

Interrelating Knowledge Management and Intellectual Capital

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The professional services firm (PSF) is undoubtedly the example *par excellence* of a knowledge-based organization (Alvesson, 2004; Löwendahl, 1997; Sveiby, 1997). Its services are intangible, typically in the form of information or advice, and its employees are well educated with specialized, highly cognitive skills. Insight, reflexivity and ideas are the main resources of production – and the main outcomes of the production process. As professional services firms, consultancies offer knowledge as a means to provide solutions to its customers, often with the goal of enhancing the profitability of the client firm. Since knowledge is essential for PSF growth and performance, management control activities are oriented toward allocating knowledge for an economic end. Firms also try to make knowledge and its related processes more manageable through the application of a variety of technologies and devices.

Contemplating firms that exist in the co-called knowledge society, Drucker (1993, p. 7) formulated a major challenge for researchers as well as managers in knowledge intensive firms:

> How knowledge behaves as an economic resource we do not yet
> fully understand… We need an economic theory that puts
> knowledge into the center of the wealth producing process.

Drucker suggests that while knowledge is related to the production of wealth, how this is done in practice continues to escape our insights. Questions linger with respect to how the translation between knowledge (management) and wealth production actually takes place.

The chapter attempts to engage this question, as we focus on the translation between knowledge and wealth production, drawing out the distinction between knowledge management and intellectual capital. As part of this discussion, we distinguish between (1) the mechanics of developing, distributing and interpreting information and knowledge, which we characterize as first-order knowledge management (KM), and (2) the control of knowledge resources through economizing, organizing and modularizing knowledge, which reflects second-order KM concerns (Kreiner & Mouritsen, 2003: Mouritsen & Flagstad, 2004). As an illustration of these points, the chapter draws on material from COWI, a Northern European consulting firm,[1] and its efforts to manage knowledge and develop intellectual capital statements.

The chapter begins with a brief overview of the role and functioning of knowledge in the context of intellectual capital. The discussion then turns to COWI as an example of an innovative approach to knowledge management and the implications for KM practices in professional services firms. When looking though the lens of intellectual capital, the individual seems to lose some glamour compared with KM rhetoric, as attention is increasingly placed on the development of a *constellation of knowledge resources* as a network rather than on the development of knowledge in and of itself.

KNOWLEDGE MANAGEMENT AND THE EFFECTS OF KNOWLEDGE

From a managerial perspective, knowledge is a peculiar resource. It is obviously important, especially in knowledge-based organizations. We could even argue that knowledge

is "good" because more knowledge intuitively is better than less knowledge. Knowledge as such, however, is an abstraction without an object. Out of context, it is not clear exactly what it is that managers should do to effectively deal with "knowledge." Typically, therefore, the management problem – which might be thought of as first-order knowledge management – is framed in terms of how to find knowledge, share it, and/or store rather than thinking about what actually constitutes knowledge.

This orientation toward knowledge raises a series of concerns about how knowledge can be managed. As suggested above, all too often the literature is oriented toward handling knowledge more than identifying its object. Nonaka (1994), for example, focuses on the relationship between tacit and codified knowledge and between personal and organizational knowledge. He and his colleagues (e.g., Nonaka & Takeuchi 1995) describe four modes for knowledge conversion between tacit and codified knowledge, and arrive at the conclusion that knowledge can be managed either through socialization, externalization, combination or internalization. The clear emphasis here is on the different possibilities of where knowledge is located and how it might be captured and shared rather than on the object of the knowledge. In Nonaka's view, tacit knowledge is the main source of creativity and motivation to engage, which is necessary for the knowledge-based organization to thrive. Yet, while this is an inspiring and compelling proposition, it is not clear that it will always work.

March (1991) distinguishes between exploration and exploitation, of which exploration reflects Nonaka's version of creativity, but he also cautions that creativity is a very difficult mode for a firm to constantly entertain (see also Kreiner, 2002). Since creativity develops new things – typically things that have not been seen before – such novelty, by definition, is often met with reluctance. A dominant sentiment in organization after organization is that the status quo works, so why change it. Since creativity can also be met by the response of stupidity, there can be personal costs to creative endeavors. March (1991) also suggests that creativity, if

it works, can be detrimental to coordination and thus to productivity and coherence. If all processes are creative and in a state of flux, they can be unpredictable and unreliable. As such, they cannot be part of an organized setting. So, even if a certain amount of creativity is doubtlessly important, the organization would deteriorate if creativity were the only operating principle.

Similarly, if exploitation was introduced as the main principle for management and all processes were engineered to "best practices," there would be no learning. The organization would gradually stifle, and opportunities (e.g., in the form of introduction of new products, services or processes) would be forgone. In practice, of course, it might be easier to accept some form of exploitation rather than exploration, because something that can be demonstrated by successful examples is more readily acceptable. However, we cannot know the consequences of forgone opportunities because the possible opportunity cost cannot be observed, only inferred.

The problem, therefore, is not just to strike a balance between exploration/creativity and codification/exploitation. To merely attempt to achieve an "optimal balance" between these perspectives is an insufficient proposition, largely since it appears to be a moralizing statement rather than a step toward a solution to see how processes of exploration and exploitation can function simultaneously in the organization. Conventional wisdom suggests that this is difficult or almost impossible to achieve. For example, Hansen, Norhia and Tierney (1999) distinguish between a personification strategy and a codification strategy. They argue that some professional services firms are characterized by repetitive set of tasks and could therefore benefit most from adopting a codification strategy of knowledge management, while others might benefit more from personalization. The authors suggest that the right mix depends on the markets the firms operate in: a heterogeneous market place requires a personification strategy

while a homogeneous set of customers and services makes a codification strategy more effective.

Both Nonaka's (1994) and Hansen and colleagues' (1991) suggestions imply that knowledge under different circumstances has different fundamental properties, and are thus different things that require different forms of management. Even if there are relationships between Nonaka's four modes of knowledge management and Hansen, et al's two types of strategies, they are still understood as having separate foci. Each of the forms has a separate existence from the others. But even when inscribed in processes and strategies, it is not possible to conclude that knowledge is an object, because when functioning in organizations – in essence, attempting to be productive – it becomes part of an extensive network of producers, users, mediators, gatekeepers, formalizers, doers and destroyers, all of which keep certain kinds of insights and information in place organizationally, technologically, politically and strategically.

No knowledge is "on hold," even if it is "waiting" in a technology or integrated into an IT system. Likewise, no knowledge could exist only as feelings, emotions or cultural expressions. To suggest that the question of knowledge can be squeezed down to an ontological discussion, as is done in most of the literature on knowledge management, is to overlook the essential part of knowledge – the way it makes a difference. The further we take knowledge out of its context, the less likely are we to understand how it works. Rather, attention could be directed towards the process and networks where tasks are accomplished and where knowledge is embedded in something. When knowledge unfolds, its productive capabilities, which are inscribed by different "containers of knowledge," still have to operate on something else to make a difference. Knowledge is a process of applying, developing and stabilizing certain insights at the same time. As Latour (1987, p. 248) eloquently argues:

No one has ever observed a fact, theory or machine that could

survive outside the networks that gave birth to them. Still more

fragile than termites, facts and machines can travel along extended

galleries, but they cannot survive one minute in this famous and

mythical 'out-thereness' so vaunted by philosophers of science

The point is that knowledge exists in a network. This network is heterogeneous, incorporating a vast array of elements from people and facts, to intranets and extranets, to "small-talk" and interpersonal exchanges. The elements cannot exist separately as containers, and therefore the challenge is to create a perspective that allows the *relationships* between these "containers of knowledge" to develop. This perspective must incorporate both the items of knowledge and the strategizing involved in developing and maintaining a purpose of the knowledge that has to be developed, applied and stabilized. Otherwise the network would have no orientation.

This is where intellectual capital – a second-order KM challenge – separates itself from our initial foci on (first-order) knowledge management. The idea of intellectual capital opens and incorporates more knowledge containers than was possible through a limited view of the mechanics of developing, distributing and interpreting information and knowledge. It also provides knowledge with a purpose, whether strategic or political, and orients it toward effects that go beyond the mere accumulation of knowledge. By focusing on intellectual capital, knowledge is about making a difference to something or somebody. Within the context of professional services firms, the idea of intellectual capital goes beyond the limiting assumption that people occupy the central container of knowledge or that codified knowledge will only work in certain kinds of markets. Rather, it highlights that knowledge functions in a network, where facts, aspirations, employees, clients, stabilized insights and other phenomena travel

together – and this networked interaction is exactly that which makes knowledge powerful and enables it to be broadly disseminated.

KNOWLEDGE MANAGEMENT AND INTELLECTUAL CAPITAL AT COWI

COWI is a Northern European consulting group that provides services within the engineering, environmental science and economics fields. The organization has roughly 3400 employees of whom approximately 2100 are graduate engineers, planners, sociologists, biologists, doctors, agronomists, economists and other university graduates. COWI is viewed as a knowledge-intensive firm because of its heavy reliance on people and their areas of specialization. The firm integrates various types of expertise, symbolized by its diversity of employee backgrounds and skill sets, toward meeting client needs.

First-Order Knowledge Management Challenges

As depicted in Figure 1-1, COWI's management has adopted an official policy that provides a good overview of its KM orientation. As its first principle, COWI heralds the primacy of its employees. It suggests that since knowledge development goes through employees, they have to be motivated and engaged. This, of course, was a challenge to organizations in the "pre-knowledge" society. Its focus is on stabilizing knowledge, since it favors an organizational space constituted by a more networked organization, where dialogue and collaboration are central. Managers are thus put under scrutiny to conduct a particular type of work, and the manager – not primarily the employee – is called to accountability.

INSERT FIGURE 1-1 ABOUT HERE

The manager has to sustain a development focus through particular kinds of investments, whose objectives are to communicate values, secure sharing of knowledge, make relevant information available, and ensure that corporate development and personal development are conducted simultaneously. Such ambitions put the employee at the heart of corporate strategy and suggest that employees constitute the only "raw materials" from which the firm can grow and prosper. This perspective is in line with the idea of the "knowledge-creating company" (Nonaka, 1999).[2]

The second principle is that managers also have to include employees *outside* organizational work units and departments; to make them part not only of the organization but also relate them to the clients. Employees must experience clients' needs and must be encouraged and supported in inter-unit cooperation. Therefore the notion of hierarchy is weak, and the manager has to be able to act on corporate rather than departmental or work unit goals and ambitions. The knowledge-based firm is in this exposition also an entity, where different kinds of alignments have to be performed simultaneously for corporate and individual development to be effectively integrated. This integration stems from two main integrative mechanisms: a focus on the client's needs and the capitalization of cross-specialization insight from the organization as a whole.

There are different orientations – and potential tensions – between these two KM principles. The first principle directs attention inwards in the organization, as knowledge is presumed to be located in the employee. The supposition that knowledge is in the "heads of people" implies that the crucial management problem is to motivate people to use it properly. Thus, a central KM task becomes education, and people must be managed so they will be properly aligned with corporate objectives and development. Incentives to create knowledge sharing are therefore important concerns of managers.

The other principle implies that knowledge is oriented outside the person and, to some degree, outside the organization. Not all knowledge attracts the same kind of attention when an external element is added in the form of a client. The introduction of a client differentiates relevant and non-relevant knowledge. Knowledge, according to the first principle, is in the person and has to pass a logic or objective criterion like "truth." The second criterion suggests that it also has to "perform" (i.e., to make sense) in eyes of others. This kind of knowledge is not only personal, but also related to others' ambitions about what knowledge can or should be able to accomplish. Since clients would probably often want the firm to mobilize knowledge from different departments, suddenly the organizational mechanisms of knowledge integration become knowledge producers themselves. This principle indicates that integration mechanisms also perform knowledge services, and in particular they create new knowledge by combining and recycling existing knowledge. Within this context, mangers' concerns focus on relating items of knowledge to each other.

The complexities involved by the second principle should not be underestimated, especially since important containers of knowledge exist beyond individuals per se. For example, relationships between employees and clients produce insights; relationships between employees across the firm create new knowledge; and relationships between various kinds of internal employees and clients give rise to yet new knowledge.

A new layer or dimension of creativity in the professional services firm is introduced here. Individual knowledge is rarely, if ever, acknowledged merely because it is most recent, most advanced or the most true knowledge. Its relevance is not judged by its standing in terms of truth; individual knowledge, which is professional, is not surprisingly interesting if it has agreeable effects, e.g., for the development of client relations. It has to *perform* in the world rather than merely describe the world (Lyotard, 1984). This implies that expertise in the form of true technical knowledge and insights into a professional area do not suffice as adequate

knowledge. The individual also has to know about clients, their needs and organizational arrangements that allow knowledge development and sharing to take place. This includes, at the very least, that technical knowledge has to be intertwined with knowledge about corporate ambitions, so that the development of individuals' knowledge – even their technical knowledge – has to pass a test of relevance which then establishes the contours of performative knowledge, which may not always be true or best knowledge in a technical sense.

A lingering question focuses on how such complexities can be managed. COWI's KM guiding principles suggest this to be done through *dialogue*. The organization's culture brings coherence and direction to this dialogue. The organization becomes a place, where people can experience each other, interact and, importantly, act in situations of co-presence. Collective learning becomes an effect of learning opportunities pursued by individuals – employees and clients – who are engaged in learning activities made possible by the common understanding of the "rules of the game" established by a community of people. Such ambition is implied by COWI's management principles. However, the entire construct of integration through dialogue is founded on a fragile form of knowledge management. Learning exists only when a breach of community ambitions has been made – that is, when people experience a mismatch between what they do and what they are compelled to do by the situation they are in. Learning is thus developed locally and compared with cultural ideas of ambition and direction. Yet, COWI seems to react negatively toward this notion of knowledge management, especially in the context of its intellectual capital ambition.

Intellectual Capital and Second-Order Knowledge Management

While first-order knowledge management is concerned with the mechanics that hold a community of inquirers together, intellectual capital adds a new dimension by creating a managerial agenda on the basis of the firm's knowledge resources. Thus, second-order

knowledge management implies new types of questions that go beyond the sharing of knowledge among people. Rather, questions are raised about economizing (i.e., how much should be invested in knowledge development and sharing), organizing (i.e., where should knowledge be located), and modularization (i.e., what knowledge should be re-used). When these questions are raised within the framework of an intellectual capital statement, they become managerially-oriented issues.

While first-order knowledge management raises questions about relevance from the perspective of a culture – the certainty of a community – the intellectual capital statement focuses on relevance from the perspective of "reflexivity" – the uncertainty of the adequacy of performance. Reflexivity is a different mode of inquiry than what follows from the mere sensing of "disorder" in the community. Reflexivity characterizes and raises questions about the status quo, often with a view to its (possible) transformation. As Giddens (1990, p. 38) suggests, "the reflexivity of modern social life [is] that social practices are constantly examined and reformed in the light of incoming information about those very practices, thus constitutively altering their character." Consequently, information about knowledge is used to alter knowledge – it transforms practice.

The intellectual capital statement is a management technology aimed at allowing such reflexivity to occur. It does so by constructing a "non-community" image of the firm that presents it in a form that is outside the conventions of corporate culture. As such, it illuminates concerns about knowledge, not in terms of their fit with organizational culture or community, but with managerial questions based on insights that are partially de-contextualized or at least removed from the cloud of groupthink that a community is likely to produce (Mouritsen & Flagstad, 2004).

As suggested in Figure 1-1, COWI attempts to monitor its performance as part of its KM efforts, which creates this type of reflexivity. The monitoring system regarding intellectual

capital is part of the organizational routines used for internal management purposes, but parts of it (as shown in Figure 1-2) are also communicated externally as part of the company's annual report.

Insert Figure 1-2 About Here

The intellectual capital statement in Figure 1-2 presents a new expression of knowledge management. First, it defines a framework of interest, which is larger than the one stipulated in COWI's KM policies (Figure 1-1). A series of new objects have been added that go beyond employees per se focus on two additional types of resources or knowledge containers – customer relations and organizational processes. While the principles outlined in Figure 1-1 do mention them, their actual role in the overall KM framework is much more substantial in Figure 1-2. Thus, COWI's intellectual capital statement suggests that knowledge is translated into knowledge resources, which are objects, or in our terminology containers of knowledge. These containers not only enable the circulation of knowledge, but they are also objects that can be acted upon from a managerial perspective. Suddenly, we see that knowledge is transformed from something in the heads of people to various types of bodies or containers.

The framework introduced with the intellectual capital statement also identifies three managerial challenges, differentiating resources, processes and results. In general management language, it focuses on the constitution of a portfolio of knowledge resources (just like the financial balance sheet is interested in the constellation of assets and liabilities), the investments in process-improvement (just like the financial statement talks about investments), and outcomes (just like the financial statement pinpoints financial effects). The intellectual capital statement thus superimposes a set of general management questions on KM efforts.

Second, the intellectual capital statement creates a grid that allows the organization to quantify its resources. For each knowledge resource, the grid numerically captures these three managerial concerns (resources, processes, results), and the firm is provided with documentation that, over time, indicates the direction and magnitude of development. The statement allows a general reading of what is going on, and provides a de-contextualized understanding (i.e., from outside the community or the culture) of the current state of affairs.

Looking at the indicators in Figure 1-2, the firm appears stable, especially in terms of client relationships and employee resources. At the same time, the organization's intranet seems to encompass more and more best practices. The portfolio, thus, indicates an effort to try to stabilize knowledge as best practices. Examining the investments in processes, there is more uncertainty in the client portfolio than might be initially apparent, because the separate indications of in- and outflows of clients suggest more clearly that the firm's relations with clients are constantly in flux and are being reformed. This introduces a measure of risk in understanding the portfolio of customers. Further, the low level of intra-firm processes is somewhat surprising, especially considering the ambition of the firm stated in its KM principles (Figure 1-1).

Third, management is able to use the intellectual capital statement to indicate (through the use of arrows in Figure 1-2) where changes are desired, focusing on the need for more international and private sector clients, more engagement in networks outside the firm, more attention to the intranet, and more media attention. Obviously this focus goes well beyond first-order KM activities. From the perspective of second-order order knowledge management, the firm is networked. The intellectual capital statement expands knowledge management from a relatively narrow focus, offering a broader view so that the client and the network are central part's of the firm's KM activities.

These three observations characterize how intellectual capital or second-order knowledge management can work. By inscribing knowledge resources and making them amenable to analysis through quantification, knowledge is suddenly something that can be evaluated generally rather than only from the perspective of the organizational culture favored by first-order knowledge management. Thus, in the intellectual capital statement knowledge is presented in a way that allows an analytical interpretation of what is happening and what *could* happen in the KM arena. The intellectual capital statement also invokes a normative proposition, raising questions about *how* the firm develops its knowledge containers in which insight, information and knowledge are found, shared, changed, critiqued and integrated.

This approach and its quantification allow a de-contextualized and general interpretation of the firm – just like an annual financial statement presents a one-sided and preliminary view of the firm's economic value. Thus, to be useful, the intellectual capital statement must also be interpreted and managed in organizational context – which can raise significant challenges. As illustrated by COWI's intellectual capital statement:

1. The language of knowledge is connected with the language of growth and profitability. In analyzing the firm's project-management capacity, for example, it is suggested that 'we will concentrate project management on relatively fewer key employees and thus optimize the use of project management experience.' The challenge is to actually *optimize* 'project management expertise' in practice.

2. A composition of capabilities and knowledge resources is presented as conducive to the changes in the market place: 'our strategy is focused on international activities … [executed by] project

management capacity on international assignments.' This indicates that the specific challenges in putting knowledge together is prioritized and that building certain capabilities are more important than other ones in the specific situation of the firm. In effect, not all types of knowledge are managerial concerns all the time.

3. The firm's new portfolio of potential employees indicates that 'the survey of engineering students' preferred places of work ranks COWI in second place.' While favorable, this perspective also suggests that individual employees are transformed from concrete individuals to elements in the labor market. The person becomes a type, and individual competency development is transformed into a portfolio decision.

These points are, of course, subject to interpretation. By drawing on this information in COWI's intellectual capital statement, our intent was to illustrate how knowledge can be structured, debated and managed. In a sense, there is an element of displacement in this approach, where individuals' characteristics are developed into appendices of other things and transformed into a broader concern for the corporate agenda.

As knowledge is made "manageable," the individual becomes less significant and emphasis is increasingly placed on the knowledge fit with the corporate strategy. The person fits this framework, it increasingly appears, *if* he or she can understand the client and align his or her aspirations with those of the client. The person is viewed as particularly well-functioning if he or she can operate in the context of the firm's best practices, becoming part of organizational capital – just like a particular category of people will be given background and training (knowledge) to become project managers. In this instance, project managers – not

individuals – constitute the particular kind of capability that is able to form a network with the client, the organization and its employees. Thus, knowledge management is taken out of the context of the individual and made a corporate concern through which the individual is interesting only for certain skills that make sense in a network involving other organizational entities, global competition, client structure and the means of collaboration, e.g., in the form of information and project management systems (Larsen & Mouritsen, 2001).

We see here a new form of reflexivity in relation to knowledge. The firm not only needs to be capable, but also capable of doing *something* (Mouritsen, et al, 2001). This "something" must be strategic, because it concerns what the firm is able to achieve with the competencies that it puts in place. This strategic focus, for example, could be a narrative about how knowledge functions in the firm, what its objectives and objects are, and what kinds of efforts (i.e., concrete KM mechanisms) should be put in place. This is the way that the intellectual capital statement can help to survey not only what knowledge *is*, but also how it *develops*. Concerns can then be raised as to the most interesting constellation of knowledge resources and their connections. This is, at least, what the intellectual capital statement "promises."

Looking at COWI's intellectual capital statement and its narrative (according to the principles introduced in the Danish guideline for intellectual capital statements; see Mouritsen, et al, 2003), for example, a number of relationships can be suggested. As discussed earlier, first-order knowledge management concerns developing, disseminating and storing knowledge, i.e., the mechanics of knowledge creation and knowledge sharing. As a second-order KM technology, however, Figure 1-3 focuses on the logic of knowledge and creates a strategy for what knowledge is to accomplish and how that knowledge narrative, as well as a set of durable management challenges, unfolds. Together these elements outline COWI's business model of knowledge, a set of first-order KM efforts and a set of associated indicators. The business model and first-order KM activities place knowledge management firmly within the culture of

organizational learning and require knowledge sharing in a community. Here knowledge is

embedded. The indicators do quite different things. They disembed KM concerns because they

distance them from the culture/community and introduce a new layer of reflexivity. The

numbers speak more to a general "production function," where general questions about

development in the portfolio of knowledge resources, the development of investments in

developing knowledge, and the development of effects can be raised. These concerns are not

tied to the specific organizational culture or community; they speak more generally to resources

possessed in principle by any firm.

Insert Figure 1-3 About Here

Figure 1-3 illustrates a translation of the intellectual capital statement. It creates a

framework, which interacts with the reader's logic, to question the extent to which the firm is

well functioning, successful and sustainable. As a way of guiding an analysis of these

indicators, COWI presents the purpose of intellectual capital as the development of an

appreciation of the user's value of the service through a particular offering that requires certain

knowledge resources. The presentation in Figure 1-3 explains how the translation between this

ambition and certain activities takes place. The ambition to create "interdisciplinary solutions,"

for example, translates into such management objectives as "cooperation with the customer,"

"project management," and "knowledge sharing." These initiatives, in turn, translate into

specific management mandates, such as the need to "develop markets," "increase cooperation

between groups," and "control quality." These initiatives can then be visualized by a series of

indicators that reflect the actions, such as "customer profiles," "level of interdisciplinary

cooperation," and "quality audits." The translations show how these ideas are actualized, and the various elements help to refine and redefine each other. As proposed by COWI, for example, we can trace how "interdisciplinary solutions" relate to "quality audits" and ultimately in turn to quality management initiatives.

KNOWLEDGE MANAGEMENT AND INTELLECTUAL CAPITAL IN PROFESSIONAL SERVICES FIRMS

The COWI case illustrates a dilemma in managing knowledge resources in professional services firms. The translation between first- and second-order knowledge management centers on the extent to which a firm's knowledge managers can (or should) allow individuals to be categorized as a "production resource." An organizational member, as part of a firm's intellectual capital, is only meaningful when he or she is part of a broader network of concern. This does not mean that a professional services firm will not benefit from looking at the quality of its staff. It just means that the very idea of staff quality depends on relationships with clients, other staff, organizational procedures and even IT systems.

As illustrated by the COWI case, in this instance project management was a central factor in understanding how individuals are attached to other objects both inside and outside the firm. Project management capabilities, of course, may not be universally the critical KM challenge in all professional services firm. Project management is singled out as a concern among other concerns, and reflects a prioritization of the possible ways in which knowledge can be developed in the firm. COWI's intellectual capital statement indicates that project management capabilities reflect a current barrier in the development of the firm's knowledge. Other possible avenues to develop knowledge are viewed as less rewarding in the situation. This can be seen from two things in the intellectual capital statement:

1. COWI lacks project management skills particularly in international
   projects, which is the challenge to be addressed
2. COWI has a good reputation in the eyes of students (possible
   employees) and therefore the labor market is seen as favorable.

The priorities in knowledge management can be analyzed and pointed out in this way, illustrating how the intellectual capital statement can help navigate between different types of efforts. In this instance, project management is seen as a current barrier, but recruitment is not a concern because there is a good supply of qualified candidates. Investments in project management are thus a managerial response to the situation. In other situations it may be that recruitment would be singled out as a domain for managerial concern. The intellectual capital statement helps to identify priorities in the management of knowledge resources. Therefore, the intellectual capital statement becomes a means to make priorities and decisions about the development of knowledge management, and it helps to prioritize the various courses of action that can be pursued.

The employees in a professional services firm are typically highly educated. Looking at the descriptive statistics of COWI, the number of such educated and skilled employees approaches 3400. Although this has been taken as a signifier of a firm's knowledge base and intensity, the chapter suggests that the KM challenges facing the professional services firm are far more complex. This recognition marks the differences between what we have referred to as first- and second-order knowledge management:

1. Rather than seeing the individual as the object of management of
   knowledge, the network of knowledge resources, including both
   human and non-human objects, should be recognized.

2. Rather than mainly focusing on the cultural-based community of people, attention should be directed to the networks between different parties inside or outside the community – and to what the network implies.

3. Rather than merely suggesting that knowledge development is an end goal, there should be attention to how knowledge makes a difference.

4. Rather than accepting that knowledge is manageable only as processes involving people, knowledge management should also be oriented towards management concerns that emphasize economizing, organizing and modularizing knowledge.

5. Rather than suggesting that knowledge about the firm's knowledge base can only be captured by intuition and reflection, attention should also be placed on a KM portfolio that attempts to capture and quantify a firm's knowledge resources – thus enhancing reflexivity.

In the transition from first- to second-order knowledge management, the professional services firm will experience disruptions and surprises. It is a novel approach in people-intensive firms, especially where the employee has traditionally been the centre of concern. Even if some aspects of second-order knowledge management are present in many professional service firms, they are generally not fully implemented. Of course, some critics might argue that this approach to knowledge and knowledge management is not needed. On the other hand, this perspective could translate knowledge management into a more reflexive praxis that addresses Drucker's (1993, p. 7) question about how knowledge behaves as an economic

resource. If this is the case, perhaps the development of the professional services firm would be far more professional.

NOTES

1. Further information on the COWI can be found at <www.cowi.dk>.

2. Our description of COWI is clearly a simplification of the multitude of activities that go on in relation to knowledge management and intellectual capital. However, our analysis is designed to make the points clear rather than to cover all the practices that a full coverage of COWI would require. We pay only scant attention to the particulars of COWI's "best practices," knowledge sharing practices, competency databases, project information databases, internal networks, project-management courses, and so forth. We suggest that these are all part of the elements that make up the intellectual capital of the firm, but we do not show in detail how they work as practices. These are items of knowledge management that are made to cohere through intellectual capital, as we explain in the chapter.

REFERENCES

Alvesson, M. (2004). *Knowledge work and knowledge-intensive firms*. Oxford: Oxford University Press.

Drucker, P. (1993). *Post-capitalist society*. Oxford: Butterworth-Heinemann.

Giddens, A. G. (1990). *The consequences of modernity*. Stanford: Stanford University Press.

Hansen, M.T, Norhia, N. & Tierney, T. (1999). What's your strategy for managing knowledge? *Harvard Business Review*, 77 (2): 106-116.

Kreiner, K. (2002). Tacit knowledge management: The role of artifacts. *Journal of Knowledge Management*, 6 (2): 112-123.

Kreiner, K. & Mouritsen, J. (2003). Knowledge management as technology: Making knowledge manageable. In B. Czarniawska & G. Sevon (Eds.), *The northern lights* (pp. 223-248). Copenhagen: Copenhagen Business School Press.

Latour, B. (1987). *Science in action.* Milton Keynes: Open University Press.

Larsen, H. & Mouritsen, J. (2001). Videnledelsens 2. bølge: En recentrering af videnledelsen gennem videnregnskabet. *Ledelse & Erhvervsøkonomi,* 65 (1): 5-16.

Lyotard, J.-F. (1984). *The postmodern condition: A report on knowledge*. Manchester: Manchester University Press.

Löwendahl, B. (1997). *Strategic management of professional service firms*. Copenhagen: Handelshöjskolens Forlag

March, J.G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, *2* (1): 71-87.

Mouritsen, J. & Flagstad, K. (2004). Managing learning and intellectual capital. *International Journal of Learning and Intellectual Capital,* 1 (1): 72-90.

Mouritsen, J., Larsen, H.T. & Bukh, P.N. (2001). Intellectual capital and the 'Capable Firm': Narrating, visualizing and numbering for managing knowledge. *Accounting, Organizations and Society,* 26(7): 735-762.

Mouritsen, J., Bukh, P.N, Flagstad, K., Thorbjørnsen, S., Johansen, M.R., Kotnis, S., Larsen, H.T., Nielsen, C., Kjærgaard, I., Krag, L., Jeppesen, G., Haisler, J. & Stakemann, B. (2003). *Intellectual capital statements: The new guideline*. Copenhagen: Ministry of Science, Technology and Innovation. (www.vtu.dk/icaccounts)

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5: 14-37.

Nonaka, I. & Takeuchi, H. (1995). *The knowledge-creating company.* Oxford: Oxford University Press.

Sveiby, K.E. (1997). *The new organizational wealth: Managing and measuring knowledge-based assets.* San Francisco: Berrett-Koehler.

Sharper Focus on People

We regard knowledge management as the latest challenge to management. It is a concept that brings important changes to the traditional industrial and system-oriented management philosophy—changes that put a much sharper focus on people and their living and working conditions, their well-being and job satisfaction and their potential for development. It is a concept that applies to client, employee or any other interested party.

This shift in focus is, quite simply, essential if the dialogue with our clients is to function at its best and if we are to continue to give the best possible consultancy service. For us as consultants, knowledge lies at the very heart of the services we provide and is therefore our most important raw material. Ensuring our knowledge resources are developed optimally, therefore, is of particular importance.

Dynamic Interplay with the World

Knowledge is best developed by being applied and shared in a dynamic interplay with the world about us. Human relations and dialogue must be strengthened, first and foremost to create the greatest possible value for our clients.

But knowledge can only be disseminated through the staff. It is the individual employee who possesses that knowledge and experience which, taken together, represents our very reason for being. The introduction of knowledge management is an important step in our efforts to create the best possible framework for staff development and working life, at the same time as securing the platform for the Group's continued growth.

Figure 1-1 COWI's Principles of Knowledge Management

Resource

	Budget 2003	Accounts 02/03	01/02	00/01
CLIENTS & MARKETS				
1 Public clients		45%	46%	45%
2 Semi-public clients		14%	15%	16%
3 Private clients	↑	31%	27%	24%
4 Other clients		10%	11%	15%
5 Number of clients		1.622	1.438	1.484
6 Projects abroad		29%	29%	30%
7 Clients abroad		15%	16%	17%
ORGANISATION				
13 Professional networks, number(*)		49	45	32
14 Staff participating in professional networks(*)	↑	20%	15%	13%
15 Best practise on the Intranet, number(*)	↑	964	894	773
16 Projects/employee, number		17	18	18
17 Ongoing projects, number		5.774	5.410	5.102
18 Avarage turnover/project (dkk '000)		1.157	1.030	1.010
STAFF				
29 Number of employees		1.972	1.643	1.581
30 Avarage age	↓	43.6	42.5	42.1
31 Length of education, year		6.4	6.6	6.7
32 Length of education, written down, year		4.3	4.5	4.6
33 Employees with highest education (PhD, etc.)		4.1%	4.7%	4.70%
34 Higher education; technical		52%	55%	56%
35 Higher education; natural sciences		5%	5%	4%
36 Higher education; social sciences		9%	9%	10%
37 Other higher education		4%	4%	5%
38 Work experience, year		15.4	16.1	16.2
39 Seniority in COWI, year		9.7	9.7	9.8
40 Project management capacity, all projects		58%	61%	57%
41 Project management capacity, major projects		35%	37%	37%
42 Project management capacity, international projects		24%	26%	27%

Processes

	Budget 2003	Accounts 02/03	01/02	00/01
8 Lectures/100 employees, number(*)		13	10	13
9 Professional publications/100 employees, number(*)		10	11	6
10 Client inflow		32%	16%	24%
11 Client outflow	↓	19%	19%	8%
19 Inter-disc. cooperation; technical		18%	16%	16%
20 Inter-disc. cooperation; natural sciences		55%	51%	50%
21 Inter-disc. cooperation; social sciences		46%	45%	44%
22 Trade within COWI Group(*)		6.4%	3.5%	2.7%
23 Staff exchange with COWI Group	↑	0.6%	0.7%	1.1%
24 Long-term postings		6.4%	2.8%	2.8%
25 Development activity, externally financed	↑	5.9%	6.5%	4.2%
26 Development activity, internally financed		0.9%	1.2%	1.7%
43 International travelling experience in COWI		21%	28%	26%
44 Supplementary education(*)	↑	0.6%	0.8%	1.1%
45 Staff Inflow		31%	17%	17%
46 Staff outflow		11%	13%	11%
47 Travel abroad		6.0%	6.3%	6.4%

Results

	Budget 2003	Accounts 02/03	01/02	00/01
12 Media exposure, millions number(*)		149	110	131
27 QA audits completed/100 employees, No(*)	↑	2.3	5.7	5.0
28 Costs attributable to external faults(*)		0.4%	0.1%	0.3%
48 Staff satisfaction index(*)		67.7%	n/a	68.0%
49 Sick leave		2.5%	2.7%	2.6%
50 Staff owning COWI shares (*)	↑	48%	62%	70%
51 Engineering students' preferred place of work, no.(*)	2/1	3/2	5/1	2/2
52 Business students' preferred place of work, no.(*)	20/7	30/9	36/11	50/13

Figure 1-2: Quantification of COWI's Intellectual Capital Statement

Knowledge Narrative	Durable Management Challenge	Actions	Indicators/Information
Use value (purpose) COWI offers interdisciplinary solutions integrating engineering, finance and the environment by combining front-line competencies in these fields **Service / product** COWI supplies comprehensive consulting services – analysis, planning and design **Knowledge resources** In order to supply these services we need a high level of disciplinary competencies and the ability to combine them into an interdisciplinary solution	Supply of 'total and complete' solutions in close contact with customers.	Develop international and international private markets	• Customer profile • Proportion of international customers • Proportion of international projects
		Enhance image with customers	• Number of speeches • Number of articles • Customer satisfaction
	Competent handling of project activities	Increase cooperation among group companies	• Interdisciplinary cooperation (time) • Cross organizational cooperation (time) • Inter-group trade
		Improve project management processes	(no indicator)
		Improve development processes	(no indicator)
		Install quality control at all organizational levels	• Quality audits • Number of errors and expenses
		Optimize management systems	(no indicator)
	Mix of competencies and skills	Make internal and external competencies visible	• # internal and external networks • # best practices • Staff educational profile • Staff experience

Figure 3-3 Second-order Knowledge Management in COWI