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# Organisational learning and competence development

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## Keywords

Competences, Organizational learning, Competency framework, Strategy

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## Abstract

This paper is concerned with the formulation of a framework for understanding the development and change of the competences of firms. Today, there is near universal agreement that the competitiveness of firms rests on the (core) competences that firms possess. However, little attention has been devoted to the notion of competence development. In the paper, it will be argued that there is, indeed, a need for research and management practice of competence development. It will also be argued that organisational learning theory is a key to understanding competence development. Based on this, a model for competence development is proposed. This is the main contribution of the paper. The paper then concludes with a number of questions yet to be answered by research on competence-based strategy.

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## 1. Competence development – the missing link?

Today, there seems to be near total agreement with the assertion that the notion of “core competences” is paramount to explaining competitiveness of the firm. Since Prahalad and Hamel’s seminal paper on the subject (Prahalad and Hamel, 1990) there has been a surge of interest in competences and competence-based strategy followed by a stream of conferences, books and, now, an international association for competence-based strategy (Sanchez, 2000). The literature on core competences and competence-based strategy has many virtues, but being specific with regard to the structural characteristics of competences is not one of them. In a previous publication, Drejer and Riis (1999) have argued that most competence definitions in the literature are based on functional characteristics, i.e. what are the effects caused by a competence? This works for those who are mainly interested in the strategic implications of a competence, as an effect could be value delivered to customers, and hence the creation of competitive advantage. In other words, if our game is competitive strategy alone, these are the kinds of definitions you would want to look for. However, this only explains part of the truth about competences.

### Competence is one among other concepts

Incidentally, “competences” is merely the latest – but perhaps greatest – of a number of conceptions aimed at explaining the competitiveness of a firm, i.e. why some firms achieve better performance than others with similar functional characteristics in terms of, for instance, product-market strategy, and so on. This issue has been discussed for as long as we have had the notion of strategic management in the vocabulary. Right back to Penrose’s idea of the firm as a collection of resources (Penrose, 1959) and its later comeback as “the resource-based view of the firm” (e.g. Wernerfelt, 1984; Barney, 1991) and the classic SWOT analysis, generally attributed to Kenneth Andrews (1960), researchers have attempted to explain to managers what internal, structural issues of the firm needed attention in the process of strategic management (Drejer, 1996). Please note that the author also includes “soft” aspects such as human knowledge and corporate culture in

the structural issues of strategic management (as do Penrose, Andrews and others) – the term “structural” comes from systems theory not organisational theory. Obviously, history did not stop with Penrose and the resource-based view of the firm. Evolution spun the work on “critical capabilities” (e.g. Aaker, 1989) with theories perhaps better suited to account for the role of human beings, tacit knowledge and other “soft” aspects of the internal structure of a firm. At least, this has been our explanation of the evolution of a new conception in strategic management (Drejer, 1996). And finally the notion of “core competences” (Prahalad and Hamel, 1990) was introduced. Some of the literature on core competences clearly builds on and extends previous work on resources and capabilities, whereas other parts of the literature on core competences ignores the existence of any theories prior to 1990. We firmly believe that one should build on previous contributions to theories in this field and feel that the notion of competence – after all – seems to be a natural starting-point for a discussion mainly because it is intuitively closely connected to the notion of organisational learning. As we shall see, the latter is close to the heart of our work (see also Drejer and Riis, 2000). Having said this, the reader will find references to the “resource-based view of the firm”, “critical capabilities”, “management of technology” and other areas of research where relevant.

**(Core) competence has so far only been defined from a functional viewpoint**

Normally, core competences are defined in terms of their functional characteristics – for instance, they offer superior value to the customers of the firm – but what about the structural characteristics of competences? The how? What are the elements of a competence and its relations? These are some of the questions addressed in this paper, though we have done so in previous work (Drejer and Riis, 1999). We will define a competence as consisting of four elements and their relations – technology, people, organisational structure, and organisational culture (Drejer and Riis, 1999, 2000) – thereby making it possible to discuss different types of competences ranging from simple (one technology and few people) to complex (cross-functional processes with a large number of people and technologies). This will

make it possible for us to start considering how competences should be developed over time, and it is the purpose of this paper to present a framework for research on competence development.

First, let us establish why this is necessary.

**Competences need to evolve dynamically**

It is usually assumed that core competences should be impossible to imitate – e.g. Hamel and Prahalad even include this as a demand for a competence to be considered “core” (most important) in their work (Hamel and Prahalad, 1994). When it is assumed that competences cannot be imitated, then it is natural to conclude that their development – and eventual replacement – is not an issue for research and/or management attention. Apart from being very rational in an economical world – e.g. investors will be more prone to invest in a firm with unshakeable, unimitable core competences than a firm admitting that it must develop new competences every three to five years – this also seems to be based on a belief that there is one recipe for success in business. The latter is best exemplified by *In Search of Excellence* (Peters and Waterman, 1982) with its advice on how to achieve business success. The eventual fate of “In search of...” and its “excellent” firms warns us of taking such an approach (Sharpiro, 1996; Drejer and Riis, 2000).

Seldom is the internal functioning of competences discussed in detail. In many cases, the “competences” that authors identify to be “key” for a firm’s success are, at best, at meta-level, e.g. innovativeness, high speed product development and their likes (see Harmsen *et al.*, 1998). In fact, many of the existing books on competence-based strategy never go beyond such meta-competences. Such competences are hard to get a firm grasp of, let alone make plans for their change and development. This raises the question of *ex post* versus *ex ante* strategies. Maybe some of the research on competences has had an *ex post* focus – meaning that a number of competences have been identified as important after the value of the competences has become evident to everyone. And not before the competences, perhaps, were identified, developed and exploited. If this is so, then it is fair to ask whether a competence-based strategy is a tool for managers to use for *ex ante* strategy

formulation or a tool for researchers to use for *ex post* strategy explanation.

Very rarely is the link between competences and their underlying technologies discussed in any great detail – apart from being part of the definition of a competence (with any luck) (e.g. Hamel and Prahalad, 1994). Thus, theories on competences do not include answers to the important issue of what happens when inherent technologies change according to their well-known S-curve-shaped life cycle. The dynamics of technological changes are, however, well-known from the management of technology literature (e.g. Tushman and Anderson, 1990), and it seems clear from this research – and empirical cases to support it – that technological change can be “competence-destroying” as well as company-destroying (Christensen, 1998; Downes and Mui, 1998). Since the latter in some instances is well-known from research, the former should – it seems – be part of the work on competences. Therefore, it is somewhat strange that the dynamics of competences caused by external changes of technologies have yet to be covered in research on competences (Drejer and Riis, 2000).

Another reason for the dynamics of core competences is changes in the product-market strategy of the firm (Drejer, 1996). Here it seems to be assumed that competences somehow are not affected by changes in the product-market strategy of the firm. Sometimes the firm is illustrated as a tree with product-market combinations as branches and leaves firmly attached to the main part of the tree – i.e. the firm’s combined set of competences (e.g. Dussage *et al.*, 1992). Such an image excludes the possibility of unrelated diversification and/or basic changes in the products of the firm, yet in the real world this is also an option on the agenda of managers, if nothing else because of technological changes altering the market of the firm. In some industries this tends to happen quite often even though everyone is equally surprised every time. Consider, for instance, computers. The change from mainframe computers to laptop PCs demanded such a change in internal competences that it took established firms, like IBM, years to catch up with newcomers in the industry – a pattern repeated on later occasions (Christensen, 1998). Technological changes altering the market are just one

example – albeit a powerful one at that – of the need for dynamic competences in order to keep up strategically.

### **About this paper – competence development**

What we have shown above is that much of the literature on competence-based strategy lacks attention to the identification, replacement and development of the competences of the firm. Thus, this paper is about the foundation for researching this important area. In the next section, we will discuss some basic assumptions regarding competence development – assumptions related to the effects of technological changes, and to how competences are changed, and so on. This will enable us to propose and explore a model for competence development. This model will form the basis for future research and the final sections will discuss the research questions and limitations of this research.

## **2. Defining competence and types of competences**

Before embarking on a trip towards the model for competence development, we need to establish the basis on which we shall stand.

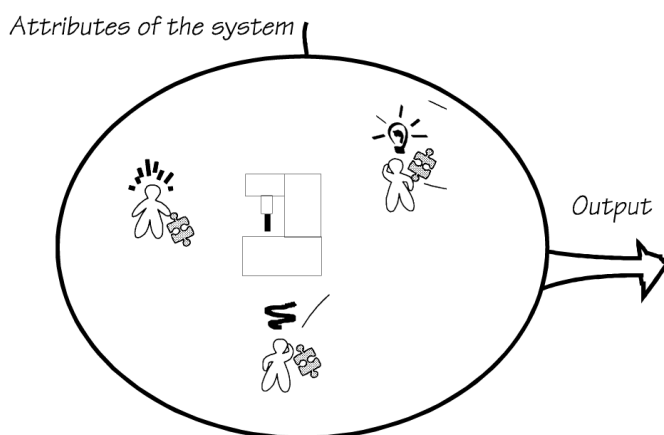
### **Defining competence from a structural viewpoint**

Our very basic starting-point, however, is how we have chosen to define “competence”. Based on previous research of our own (e.g. Drejer and Riis, 1998), as well as that of others (e.g. Leonard-Barton, 1995), we have decided to take an internal approach and define competence solely on the basis of what is “inside” a competence. With such a perspective, competences can be defined as a system of technology, human beings, organisational (formal) and cultural (informal) elements and the interactions of these elements. This is illustrated in Figure 1.

We propose that a competence consists of the following four generic elements:

- (1) (*Hard*) *technology* is often the most visible part of a competence, since it represents the tools that human beings use to do activities. We prefer to view technology as physical systems or tools – restraining the softer perspectives on technology to be part of the skills and knowledge of human beings. Hard technology may be

Figure 1 Illustration of a competence



machinery, tools, equipment, software programs, databases, and so on.

- (2) *Human beings* are to us the most obvious part of competence: if no humans use the technologies, then nothing will happen. Therefore, human beings are the focal point of competence development.
- (3) *Organisation* refers to the formal managerial systems under which human beings function. For instance, planning and control systems, reward and pay systems, communication channels, hierarchy of responsibilities and tasks, and other formal organisation manifestations will greatly influence the human beings and their actions.
- (4) *Culture* refers to the informal organisation of the firm. The corporate culture influences the human beings via shared values and norms which guide activities.

As Leonard-Barton notes, a competence may be viewed as a system, i.e. it is very difficult to focus solely on individual elements as they are related to each other (Leonard-Barton, 1995). This points to the need to focus not only on the individual elements, but in particular on their mutual interplay. The definition proposed above provides a context in which a specific technology may be seen and discussed, for instance in terms of its importance to the firm. Also, the definition emphasizes the formal and informal way in which human beings interact as an essential constituent of a competence: thus pointing to the area of organisational learning and competence development.

### Types of competences

Furthermore, we have proposed a typology for competences consisting of three types of competence (see Drejer and Riis, 1999; 2000).

#### 1. A single technology and a few people

This may, for example, be a workshop operating a few machining tools within a special type of production process. Or it may be a production group capable of processing a certain group of parts. The competence is rather easy to identify, and especially for the process-oriented workshop the technology part is rather well defined.

#### 2. Interwoven technologies in a larger organisational unit

This may, for example, be the production engineering capability to design a new tool for plastic moulding machines. This may include different capabilities (or competences) such as the application of simulation software for the extruding process, the CAD system with the specification of the product parts, the CAM system for preparing instructions for the machining of the tool, the know-how to make use of the above-mentioned capabilities in an appropriate and integrative way, etc. The technologies are interwoven, because alone their utility may be limited. But combined a significant synergy is obtained. An organisational structure and processes are necessary for the coordinated use and interplay of the various technologies.

#### 3. Complex systems connecting many persons in different departments and organisational units

For instance, consider the ability of an industrial enterprise to deliver customer orders at the promised day and with the specified quality and customisation. Obviously, this type of competence is at the heart of the competitive strength of the company – it is complex, more difficult to imitate and less dependent on technology/ more dependent on knowledge. However, it is difficult to identify the third type of competence. Examples of some of the elements of complex competences are the:

- quality management system;
- production management system;
- tacit knowledge of individual employees interacting collectively; and
- attitude and organisational culture of the company.

Examples of complex competences could be the entire process of product development from idea to actual manufacturing or the process of handling incoming orders in a company. It is common for such complex competences that they tend to be more like business processes stretching across departmental and other barriers and a lot less like clearly delimited and structured (technology-like) competences. Complex competences may include a number of competences which are complementary. Hence, the resulting competence is greater than the sum of the individual competences.

It should be noted that others have proposed somewhat similar typologies. For instance, Grant (1995) proposes a six-level typology ranging from cross-functional processes (very similar to complex competences above) to specialised knowledge (a major part of technology and, thus, below our concept of simple competences) (Grant, 1995; Drejer and Riis, 2000).

As mentioned in the introduction, it is a key assumption of this paper that competences cannot be assumed to be stable entities that can be identified and defined once and for all. Rather, we assume that it is necessary to tend to competence development on a continuous basis in all organisations. And this is the starting-point for the remainder of the paper.

### 3. Organisational learning (and competence development)

In this section, we will discuss the issue of organisational learning as a starting-point for formulating a framework that will enable us to understand competence development and, for now, formulate research questions for future work on competence development. Without going into too lengthy an argument, we will note that organisational learning seems a natural starting-point for formulating a model for competence development for, at least, two reasons. First, it seems intuitively clear that when a competence is developed this will be related to the human beings element of that competence – in popular terms “technology and organisational learning will not learn a thing – human beings will”. Second, the term “competence” in itself is, to us, closely related to the process of learning that human beings go through as they become more and more “competent”. As we shall see later, this

analogy provides some very interesting options in terms of formulating a model for competence development.

#### Perspectives on organisational learning

Obviously, there are many different perspectives on organisational learning and many different contributions to the vast field, some of which do not even adhere to the term “organisational learning”. Claus Neergaard has developed a model in which four major types of learning have been identified, each representing a specific perspective (Neergaard, 1994).

*The individual behaviour perspective* deals with informal learning processes of an individual. It captures information about human behaviour – for instance how individuals react in given situations and under specific conditions – as well as the personal interactions among people. Attention is focused on the informal, unconscious behaviour of a single organisational member and the interpersonal interactions among a number of members of an organisation (Argyris, 1993).

*The decision support perspective* focuses on formal, individual learning processes in organisations. The main interest is how an individual decision maker learns in connection with problem-solving situations. This includes the use of information technology and decision models to support decision making. The perspective is mainly used to study and understand how individual learning is influenced by available information technology and its institutionalised knowledge (Duncan and Weiss, 1979; Alter, 1980).

*The management systems and organisational structure perspective* concentrates on collective learning processes as guided by formal organisational structure and by management systems through formal planning and control processes, operating procedures and reward systems (Riis, 1978; Cyert and March, 1963; Jelinek, 1979). The allocation of responsibility and authority and the structure of divisions, departments and sections also regulate organisational learning processes.

*The corporate culture perspective* represents what an organisation knows, which is neither codified nor formalised in systems (Schein, 1990) The focus is on social, informal relations, collective habits, behavioural patterns and attitudes existing in an

organisation. Corporate culture is seen as emerging from collective learning processes and guides and shapes collective and individual behaviour.

Apart from a fairly efficient way of ordering the many different contributions to an expanding and vast field, it should be noted that these four perspectives are just that – perspectives. Thus, they are not necessarily mutually exclusive with regard to specific literature. Even though the opposite is sometimes true, much of the literature will tend to combine two or more of the perspectives described above. Nonetheless, it is possible to order the field of learning into four perspectives (see Figure 2).

**The process of learning**

Unfortunately, Neergaard’s perspective on organisational learning does little to help us understand the process of developing competence as a result of learning. And it is this process that we are interested in – competence development is the key term here. Luckily, others have been very interested in the process of learning something in order to improve one’s competence.

Today, it is widely accepted that learning takes place as a result of critical reflection on one’s own experiences (Marsick and Watkins, 1993) rather than as a result of formal training in remembering of dull theories. In the US tradition this is usually assigned to the efforts of John Dewey (1938) who was the first (American) to write on the subject. Dewey felt that education must address the notion of reflective thought. Reflective thought begins with an ambiguous situation that in some way represents a dilemma to an individual. From

this “felt difficulty”, the individual locates and defines the problem. The third step is a consideration of solutions with analysis of their many angles. This leads to observation and experimentation and, finally, to a decision to act or not on these possible solutions. It seems obvious that Dewey’s notion of reflective thought is similar to the way we normally perceive the general scientific method (when applied to everyday problems).

Several models have been proposed to illustrate the process of learning as a result of reflective thought. Dewey’s thinking shaped the work of several other theorists, e.g. Argyris and Schön’s idea about action science (Argyris and Schön, 1978; 1998) which is also based on the work of Kurt Levin’s approach to uniting theory and practice in an action research approach. Usually facilitated by an outside consultant, action research has been used to create organisational development – another term important to our purposes here – that is to improve the way organisations function (Marsick and Watkins, 1993; Burke, 1992). Argyris and Schön are, like many others, bent on improving practice. They believe that no one ever sets out to deliberately create error, but despite our best efforts errors occur frequently. Argyris and Schön (1978) propose that this is caused by a gap between the formulation of plans and their implementation. This gap is the difference between our espoused theories and theories-in-use, i.e. the difference between “what we think we do” and “what we actually do”. One reason for frequent errors in organisational life, then, is caused by not digging deeply enough into the basic assumptions guiding our actions – something that Argyris and Schön are the first to admit is tricky, since basic assumptions are normally taken for granted. Thus, they propose to call learning with a change of basic assumptions double-loop learning and learning without changing assumptions single-loop learning (Argyris and Schön, 1978).

Perhaps the best-known perspective on learning from experience is that of Kolb (1984). Drawing on a number of different sources, among others Levin, Dewey, and Argyris and Schön (Marsick and Watkins, 1993), Kolb suggests that people apprehend and transform their experiences differently. Some apprehend through concrete experience and others through abstract conceptualisation. Some transform through reflective

**Figure 2** An overview of approaches to learning

	<i>Individual dimension</i>	<i>Collective dimension</i>
<i>Formal dimension</i>	The decision-support perspective	The management systems and organisational structure perspective
<i>Informal dimension</i>	The individual behavior perspective	The corporate culture perspective

observation and others through active experimentation. These two dimensions interact, both resulting in a typology of learning styles and an experiential learning cycle (Figure 3), that moves from experiencing to observing to conceptualising to experimenting and back to experiencing,

Kolb's learning cycle – albeit developed to explain the learning of an individual – has often been used to explain learning of groups. The model asserts that, in order to have actually learned something, one must go through a full cycle of the model – turning one's actions (and their results) into experiences, complete reflection on these experiences (what can be learned here), develop and plan for new actions, decide on a course of action, and change (if feasible) one's actions according to the solutions decided on.

In recent years, a number of additional notions have been formulated that may also shed light on the process of learning. Marsick and Watkins (1993) emphasise informal and incidental learning as a contrast to formal learning. Both are seen as learning taking place outside formally structured, institutionally sponsored, classroom-defined activities. Informal learning is experiential and non-institutional, whereas incidental learning is unintentional and a by-product of other activities. The point of Marsick and Watkins is that the major part of learning of individuals and organisations is either informal or incidental and formal learning is the minor part. Furthermore, Polanyi has discussed the "object" of learning – knowledge – and proposed that all knowledge is tacit and impossible to express explicitly (Polanyi, 1983) making what is expressed mere data or, perhaps, information. This is often misunderstood as in the case of Nonaka (1991) who proposes that there are several

forms of knowledge, most notably explicit and tacit knowledge. Sadly, some prominent authors do not even seem to bother with the potential difficulties in expressing knowledge in explicit terms. Nonaka accuses Peter Senge (1990) of not bothering with this issue (Nonaka and Takeguchi, 1995) and with some right (Drejer and Henriksen, 1998). Nonetheless, the notion of tacit knowledge serves to emphasise even more strongly the informal aspects of learning (Spender, 1996).

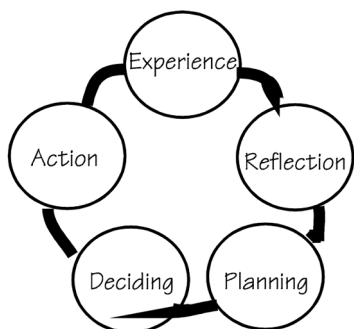
**Different types of learning and of competences**

It seems as if some of the thinking about the process of learning has been directed at the individual level, whereas other thinking is more directed towards the group and/or organisational level. But what is the connection? If any? Marsick and Watkins manage in a most elegant manner to connect many of the above-mentioned concepts and ideas – plus a few others – in a set of three windows for three types of learning (Marsick and Watkins, 1993).

The starting-point is that of individual learning – the area where we feel most comfortable when applying the thinking of people like Dewey and Kolb. Here Marsick and Watkins use the so-called Johari window, developed by Joseph Lufts and Harry Ingram, as their starting-point (Marsick and Watkins, 1993). The basic assumption of the Johari window (see Figure 4) is that individuals learn by being open to others.

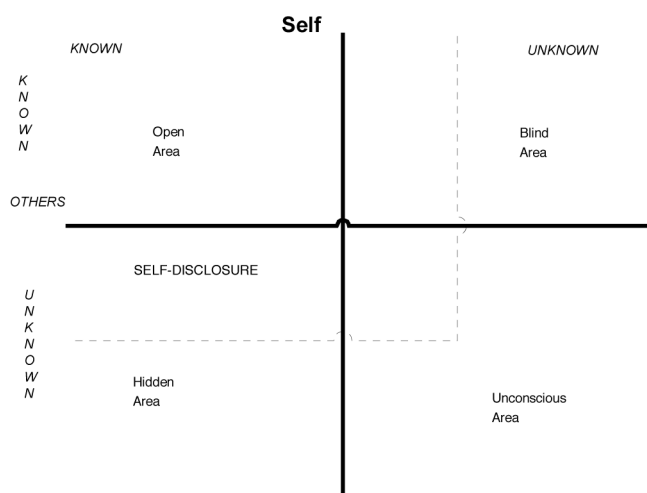
Through feedback individuals learn how others see them and through self-disclosure

Figure 3 Kolb's learning



Source: Kolb (1984)

Figure 4 The Johari window: a model for understanding individual learning



Source: Marsick and Watkins (1993)

they open themselves to the potential of more intimate relationships and also subject more of their perceptions of themselves to public reflection. In this process, others may help shape and affirm their self-understanding. The four quadrants of the model represent the open area (which is known by the individual and openly shared by others), the blind area (which others may observe, but the individual is unaware of), the unconscious area (the part of the individual which is not known by the individual or others), and the hidden area (which is the part of ourselves that we choose to keep to ourselves – including our secrets and dreams). Using the Johari window, growth of an individual can be seen as a process of learning about oneself and the feedback of others, reflecting on what has been learned, and making changes based on feedback and self-disclosure. The latter can easily be seen in relation to the learning process discussed above and illustrated by Kolb's model.

It is easiest to grasp the notion of individual learning since we have all experienced this. It may be harder to think of group learning, but most people can probably recall instances where a group acted as one entity. In groups, individuals think and learn differently as a result of their interaction with others. Groups learn when they monitor the effectiveness of the process of group interaction, while at the same time focusing on getting the task done. As illustrated in the modified Johari window for group learning (see Figure 5) groups also

confront potential dysfunctions through processes of feedback and disclosure.

The upper-left quadrant, when all is reasonably well, represents normal group processes visible to all. The upper-right quadrant includes what is known to the individuals, but not acknowledged and dealt with by the group as such. An example of the latter is that of “group think”, where the pressure to conform to group norms is so great that individuals form strong common values and bonds that do not allow them to subject areas to a thorough hearing or a true critical test. The lower-right quadrant represents the unconscious states at the group and individual level. Unconscious states pull the attention of the group members away from the task and include fight, flight, pairing, and dependency.

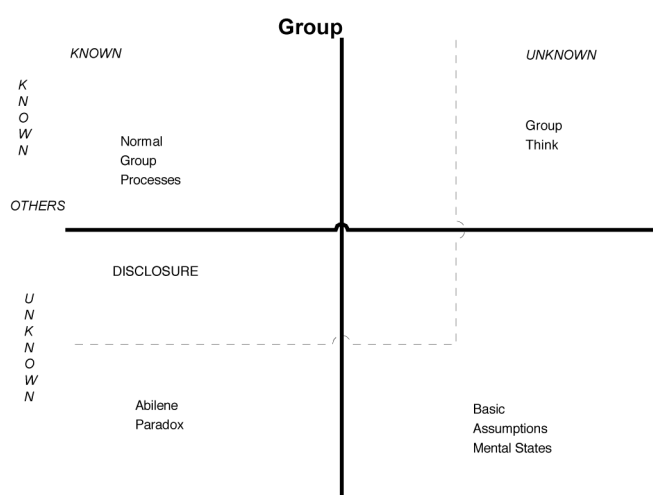
Finally, the lower-left quadrant include situations where all group members agree on something privately, but as individuals do not own up to this when in the group. An example of this is the “Abilene paradox” (Marsick and Watkins, 1993), in which everyone knows that they are about to embark on a dangerous process/journey (trip to Abilene) but are unwilling to express the truth because of the perceived risks.

Finally, we have the case of organisational learning. Many organisational theorists distinguish between the way in which individuals go about their own learning and the way in which a larger collective unit learns to function in an environment. In both cases, individuals are involved. However, when organisations learn, individuals become agents who in some way influence the way others in the organisation think, act and learn. This opens up for the power-interpretation of organisational life and or learning that we have discussed earlier, but also for the less controversial work on corporate culture as a process of organisational learning.

Once again using the Johari window as a starting-point, Marsick and Watkins (1993) examine organisational learning in terms of the interaction between what is known to the organisation and what is known by others in the environment. This makes it possible to position some of the concepts clearly related to organisational learning rather than individual learning (see Figure 6).

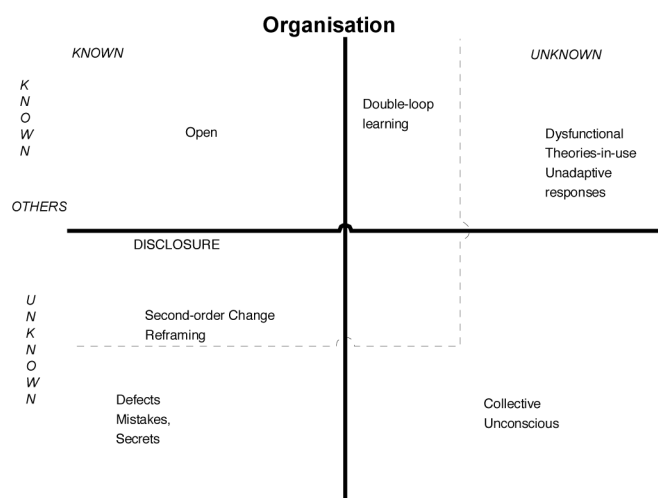
The productive work state, represented by the upper-left quadrant, where something is known both to an organisation and the

**Figure 5** Adaptation of the Johari window: a model for understanding group learning



Source: Marsick and Watkins (1993)

**Figure 6** Adaptation of the Johari-window: a model for understanding organisational learning



Source: Marsick and Watkins (1993)

environment, is depicted as an open system. Central to this concept is the assumption/idea that a learning organisation is productive, but it is also open to learning from internal and external feedback from its environment. Double-loop learning permits internal feedback, whereas reframing encourages disclosure.

But there is also the organisation's blind side as described by Argyris and Schön's concept of dysfunctional theories-in-use (in the upper-right quadrant) and the organisation's hidden side (the lower-left quadrant) where mistakes/defects are hidden from the environment.

Finally, there is the collective unconscious of the organisation (lower-right quadrant) which may include the embedded values of the organisation's culture and sub-cultures and unstated interpretations of the organisation's experiences (myths and legends).

#### 4. A framework for understanding competence development

We have now argued that competence development should be part of management practice in many industries and have laid the foundation for discussing the phenomenon further. In order to do that we have made a number of assumptions that enable us to propose and discuss a preliminary model for competence development.

#### The natural links between organisational learning and competences

It is interesting to see how organisational learning theory – especially when focusing on the process of learning – places as much emphasis on the human element, as the author does in the definition of competences in section 2. There seems to be a quite natural link between the two areas of research there. Furthermore, it is most intriguing to see how the three types of competence seem to be mirrored in the work on organisational learning. With this in mind, it seems natural to continue to be inspired by organisational learning theory in this section on competence development.

It should be noted that we tend to focus on complex competences in this section. This is due to the fact that developing complex competences must be assumed to be the most difficult to manage, i.e. a “worst case” for competence development.

#### Developing a competence

We now have to find out – or, as it is, decide – how a group of human beings (using technology for some end) improve their performance in terms of the output of the competence of which they are part. That is, how does a group of individuals become more and more competent – in everyday terms? We will assume that this happens via a process of learning to do things better and better – better meaning closer to the objectives for the output of the competence, which in turn is defined (generally) as a function of the demands of the customer. In slightly different words, the better the group of people are at fulfilling the demands of the customer (be it internal or external to the firm) the greater the competence the group of people exhibit along with technology and other elements. We realise that we have two different uses of “competence/competent” here, but as we shall see this enables us to superimpose well-known models for individuals' competence development on to the development of competences at firm level.

What we have assumed above is that the development of a competence to function better and better – i.e. become more competent – must be a function of the learning of the individuals (elements) of the system. Of course, new technologies, new organisational forms, new norms and values, etc. may well emerge in the process of

developing the competence but, if these are not linked to/part of the individuals' learning, then there will be no competence development. Consider, for instance, the many times firms have used IT implementation to formally program procedures and practices long overdue for change; all because the individuals in the firm were not involved in "implementation" of the new IT system and not allowed to learn and change their practices before the technology was rolled in.

If the learning of a group of individuals is the key to understanding how a competence develops and becomes more and more competent, then it is tempting to take a look at some of the well-known models of how individuals learn and become increasingly competent. For instance, could it be possible to use the well-known Dreyfuss and Dreyfuss (1986) model for a person's learning, where a person starts off as a novice, becomes an advanced beginner, proficient, competent (!), and finally expert? In our research, we will assume so and maintain the categories above – except for the last two. In order to avoid a third instance of "competent" being used, we would prefer to label the last two categories, respectively, "expert" and "world class".

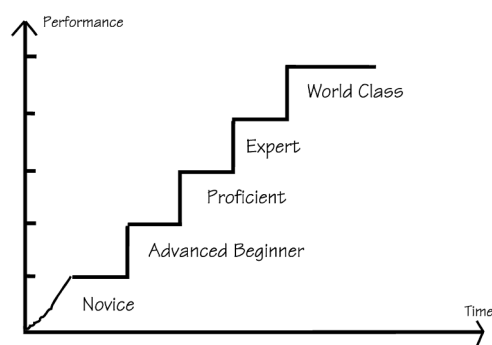
By assuming this, it must also be assumed that the group of people will have a level of knowledge that evolves in the same manner as that of an individual along the categories. Most notably, at novice-level the group will mainly use explicit rules and forms of knowledge, whereas at world-class level the group will use implicit and tacit rules and forms of knowledge. It is necessary to assume that knowledge of the group somehow is uniform, i.e. that the group will be, more or less, at the same level at the same time – at least that there will be a majority of persons at the same level at any given point in time and that it is this majority that decides the group's level of competence.

The discussion above enables us to propose the first basic model for competence development (see Figure 7). Please note that we have yet to solve the issue of how to actually measure how a group of people (as part of a competence) is at this or that level of competence. This remains to be resolved:

*Metaphor 1: The competence levels of a football team*

In order to get some indication as to whether or not we are on the right track, we will shortly discuss the metaphor of a football team to

**Figure 7** The levels of competence development



illustrate and elaborate the model in Figure 4. Starting from the bottom of the model, children's football teams – when they are small and novices – tend to be that all the players follow the ball at all times, including goalkeepers. In other words, the basic rules and how to play the game is what a coach for a team of novices must focus on. When the team advances to become advanced beginners, the players know the basic rules and most are eager to improve. Training can now focus on technical details and performance of the individual player. Later, as the team becomes proficient, focus will be on rehearsing combinations and "procedures" for how the game is to be played. This could, for instance, be a young team at division level four, where everyone is eager to practise, say, offside traps and so on. When the team advances beyond that, what happens becomes more implicit. Suddenly players know each other so well that they do not need to make formal arrangements and plans for making the offside trap work – they just "know" what to do and when. The team is on its way to becoming expert and world class – the latter, of course, stemming from years and years of practice at expert level. Far from all "expert teams" – i.e. national champions – make it into the champions league at their first attempt.

It seems as if the competence levels of a football team can be fitted into the general model, so the model may well be descriptive for some groups of individuals. But what about competences in firms? This is another issue for future research. Another interesting point now is how to move from one stage to another – the process of competence development.

### Competence development processes

We are firm believers in a situational – contingency – approach to management in general and competence development in particular. Such a situational approach would naturally suggest that there are differences between the individual stages in terms of, at

least, two things. One issue is the starting-point for developing the competence further, and the other issue is the means for creating the organisational learning of the persons involved in order to develop that competence. We will explore these differences further below:

*Metaphor 2: The development process of a football team*

From the world of football, we might once again find some inspiration on the subject of this paper. The assertion that the starting-point for developing a competence will differ from stage to stage can be translated to the notion that different forms of coaches are needed for different kinds of teams. This is, for instance, institutionalised in the coach-education of Dansk Boldspil Union, the national Danish football association, and probably practised in many clubs. Imagine, for instance, Sir Alex Ferguson – manager of the mighty Manchester United – coaching Man U's youth teams. It is quite unlikely that Sir Alex – famous for his temper – would be as successful in developing the competence of such a team as he obviously has been in developing the premiership team. This may very well be because the children's team has a different starting-point. For one thing, the kids will be differently motivated and have completely different social interactions. And, second, the kids will still need to learn a lot of basic things in hard training, before they can start focusing on, say, opponents' individual specialities, mutual understanding between players. Thus, metaphorically, the starting-point at different competence levels is different.

Now what about the means for creating the organisational learning that, in turn, develops the competence that the football teams create together? We have already hinted that the novice children's team needs to train hard on learning the basics of football in order to become an advanced beginners team. And probably the novice team can find time for little else, whereas the world-class team does not need to focus so much on basic skills. Instead, the world-class team might focus on rehearsing new combinations, new free-kick combinations, rehearse their playing system, their offside trap, and so on. And, most importantly, rehearse in living under the pressure of being a world-class team. The coach of Aalborg Boldklub – the local club of Aalborg that won the national premiership title of Denmark in 1998 – Hans Bäcké uses videotaping of individual players in order to improve combinations in defence and attack as well as many other advanced methods of training. However, for Hans Bäcké the most important task of AaB now is to change into a team that consistently wins championships and participates in international football. And this can only be learned through experience and quite informal means. Maybe this is typical of the transition from being expert to becoming world class?

Regarding the first issue – the starting-point for learning at each stage – we will propose that there must be quite different starting-points in each stage, especially if the novice stage is compared directly to the world-class stage.

**The development from one stage to the next**

Obviously, no one can tell exactly how to move through the entire cycle of competence development. The list of possible means for creating, supporting and facilitating the necessary organisational learning is much too long, the list of contingencies – e.g. type of competence, environmental dynamics, product of the firm, style of the firm, national culture, and so on – is probably even longer, and far too much in the process can never be expected to be made explicit. From the world of football, the example of Liverpool FC comes to mind. In the club's absolute hey-day in the early 1980s, the club was hailed for its efforts in learning and continuous development (some of which included a famous blue-book over encountered problems and the solutions found, a kind of craftsman-apprentice training of coaches, and so on). However, in the late 1980s something went wrong and, despite everything that was known in Liverpool, the club has not been able to recover its former glory – even though it appears as if the well-known recipe, as well as a few new ones, has been tried since. Thus, it seems very difficult to explain and recreate competence development.

Notwithstanding the above-mentioned difficulties, we feel that it is possible for us to contribute on two sides to a discussion of competence development. The first contribution is on the issue of organisational learning, where well-known models may be used to create and generate further understanding than we have had so far. The other contribution is on examples of changes – examples that may shed light on the complex process of competence development. These are the two threads that we will follow in the next section:

*Case example of organisational competence development*

In light of the complexity of competence development discussed above, of course Kolb's learning cycle can explain very little at present. The model is much too general and the problem too ill-defined. What we are saying is merely that the model can – and should – be used as a tool

for generating understanding of the competence development process in practice.

Choosing Kolb's cycle as a model for understanding the dynamic process of competence development is a logical step based on the initial assumption that it is via the individuals involved in a competence that the competence's level and development must be studied. Of course, Kolb's cycle and other relevant models as well further emphasise the need for psychological and learning process methods to be part of research on competence development. As for further understanding of the organisational learning process of competence development, we will use cases as a means for generating this understanding (see Figure 8).

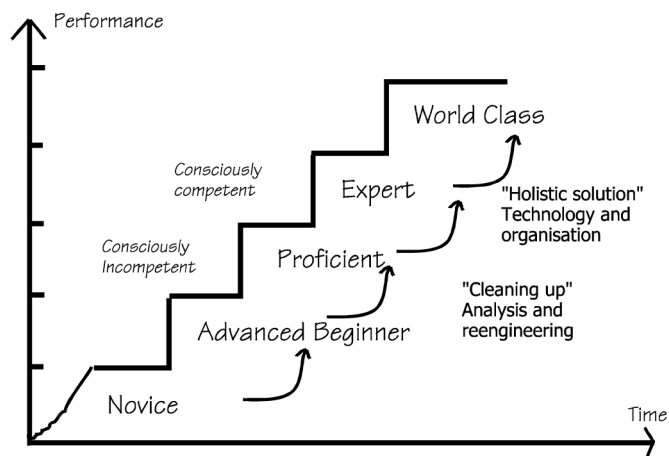
In the spring of 1999, the author was approached by a medium-sized, order-producing Danish firm, where top management recognised that a number of present problems needed to be solved. Problems included difficulties in finishing off product development in time for sales, a high work load in development, many things being done twice, lack of traceability of decisions, and so on. An analysis, helped by employees in the company, quickly revealed that the problems were far from being created by lack of individual skills. Rather the problems seemed to be created by the system by which order handling happened – a "system" that has never been formally defined or planned. The systems had merely emerged as the company had grown. Based on the company's merits and our general feel for the entire competence development process, we would tend to locate the firm as a proficient firm in the model. After the analysis, a quick effort was planned. By means of the so-called "problem matrix" (see Riis, 1992), the employees of the firm were brought to the realisation that the problems were systemic rather than personal. Based on that, five areas of attention were identified and turned into development projects in the firm. A mere five months later, four of the projects were completed with great results – for instance, a

planning method for co-ordinating sales and design had been put in place. And, for the first time, everyone felt that efforts were co-ordinated well. We will see this as an example of going from the proficient stages to the expert stage.

However, the firm in question still plans to grow rather rapidly and, furthermore, the first successes have made top management as well as employees realise that much more can be done. In fact, the fifth project of the first development has expanded into a large company-wide project of order handling, information system design and some large strategic implications. In planning for the next set of projects, top management now realises that they are faced with a completely different task from in the spring of 1999. This time several more projects need to be defined and co-ordinated, resources need to be much larger – and dispersed in the right order – and the time-horizon will need to be larger, much larger, than five months. Furthermore, it is evident that the technological solutions on the IT side, that are currently being dreamed up, need to be integrated with the organisational development of the firm. We would suggest that this development could well be an example of going from expert to world class – or maybe "just" of going the last piece of the way to expert from proficient.

These two examples tell us a little more about the learning process of competence development. We will assert to the readers that the first part of the case in itself consisted of, at least, one full cycle of Kolb's learning cycle; with the dialogue focused on making problem-matrices this was the means for creating reflection on the experienced problems. Later solutions were generated and put into action – and now the firm needs to go through another cycle of learning. However, the case also goes to show that the next shift will have to be very different from the first. And probably there will be need for several learning cycles to travel the next step of the way.

Figure 8 Illustration of the case example of organisational learning



## 5. Conclusions

In this paper, we have moved from a structural definition of competences as systems of technology, human beings, organisation and culture towards a model for explaining competence development. Based on our definition of competences, we have also proposed a typology of three different kinds of competences: simple, middle complex and complex competences.

The means for making the journey has been a discussion of the existing theory on

organisational learning. In the course of our journey, we have found that there are many striking parallel things in competence theory and in organisational learning theory. For one thing, theory on organisational learning strongly emphasises the human element (albeit there is a distinct tradition for focusing on organisational and technological elements as well). Furthermore, organisational learning seems to be divided nicely into work on individual, group and organisational learning. The latter fits nicely with the types of competences that we have proposed.

In light of these parallels, we have found it natural to base our work on competence development firmly on concepts from organisational learning. On this basis, the paper contains a proposed model for competence development and a discussion of this model. This serves as the main contribution of the paper. Nonetheless, this paper has been concerned with opening up a new field for research. In order to do that we have formulated a number of basic concepts in order to lay the groundwork for formulating interesting research questions in the years to come. We can say that we have been successful in the first respect in as far as this paper has raised a large number of questions that we need to focus on in future research. We will divide these questions into two categories:

- (1) understanding the model as a stable entity; and
- (2) using the model as a basis for a dynamic development.

### **Understanding the model**

In the first section of this paper, we made a number of assumptions that lead us to propose the basic model illustrated in Figure 3 to describe competence development over time. However, in general we need to establish whether or not the model, in fact, is a good way to describe actual competence development processes over extended periods of time. That is, does the model really capture competence development as it really is?

This question is relevant both for the stairway part of the model and for its performance axis. The latter implies asking: what is it that characterises a novice as opposed to a world-class competence? And how can we measure where a given competence is located? As for the general division into a number of stages, this is well-

known from the world of organisational learning and we have assumed that it can be transferred to the learning of a group of individuals who are the human elements of a competence. So this part of the model we feel pretty certain about. However, as for the characteristics of each stage – what is on the performance-axis of the model – we have a number of research questions. From the literature on business excellence and even software development, a number of divisions into stages are well-known and even seem to fit the look of our model. However, we believe that a lot more needs to be done in order to feel confident in a general division into stages. For instance, in the models of business excellence, formalisation plays a crucial role in the performance axis. The better – more competent – it is, the higher the score on formalisation. We are not sure that this needs to be the case – what about flexibility and innovation? Do these have to be formalised in a world-class competence? Or could it be that such processes still have to be tacit and informal? A lot of research needs to be put into formulating the performance axis of the model. Another important issue would be the situational factors of the model. Are there different sets of performance for, say, the three types of competences? Or, better still, for different industries with different environmental conditions? For now, the model seems to be a great tool for discussing competence development. In the future, the models also need to become a great tool for describing what happens in the real world of competence development. This, of course, goes for the model applied to one competence stairway and to several competence shifts.

### **Understanding competence development in practice**

Furthermore, we know far too little in terms of the dynamic processes of competence development as organisational learning and change processes. Maybe such processes can be fitted into a revised version of our model, but independently of this issue we need to understand competence development in its own right. From a learning perspective, we need to understand and help to improve how a group of individuals go through whole Kolb learning cycles and develop their shared competence. This is to say that it is not only the learning of the people that is interesting, we also need to link this learning to the effects

of it – to competence development. As we know, not all learning is positive learning. Therefore, we need to be sure that learning taking place actually builds the competence – and does not destroy it. Hence, we need to follow, describe and understand the learning processes that lead to competence development. Furthermore, on the more normative side, we need to find, test and propose solutions to the facilitation of such learning processes. For instance, how can we make sure that the team reflects on their actions thereby creating the link to new learning cycles?

Methods exist for creating reflection and such methods should be tested and refined in order to say something normative about competence development over time. From a slightly different perspective, we also need to study organisational change. When dealing with complex, cross-functional competences, a change of the competence is bound to affect the entire organisation – and possibly create the need for developing the whole organisational structure, communication channels, reward systems, culture, and so on. But how can that be done as a result of competence development?

We will emphasise that we do not wish to study organisational change as such – plenty has been written on that subject. Rather, we wish to study how competence development can be implemented even when it requires the organisation to change. So it will be natural to study organisational change as resulting from competence development – perhaps especially competence shifts – and from that get the knowledge to discuss that issue normatively. All of this, of course, goes for the model applied to one competence stairway and to several competence shifts.

The overall aim of studying competence development would be to become able to understand competence development thereby reaching a level where it is possible to contribute with normative statements about the management of competence development. In terms of our model, we could say that the research in competence development has the purpose of making competence managers move from proficient to world class in their work – competent competence development that is. We look forward to contributing to the effort.

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