

Cohesion or confusion? Towards a typology for organizational learning research¹

Helen Shipton

The study of organizational learning is no longer in its infancy. Since Cyert and March first introduced the notion in the early 1960s, a plethora of books and journal publications have presented their own interpretations of the meaning and significance of the term. Despite such endeavours, there is little common agreement about what organizational learning represents and how future research may build cumulatively upon the many diverse ideas articulated. The intention here is by no means to address these issues, which have been comprehensively examined elsewhere. The purpose is rather to compare and contrast approaches in order to analyse similarities and dissimilarities, together with research challenges, for each approach. This is achieved by presenting a comparative framework to categorize the literature according to (a) its prescriptive/explanatory bias and (b) in line with the level of analysis, examining whether there is a focus on the organization as a whole or upon individuals and their work communities instead. The review concludes by presenting some preliminary suggestions for cross-quadrant research.

Introduction

Over forty years have elapsed since Cyert and March (1963) first made reference to the term 'organizational learning'. They argued that organizations respond to changes in the external environment through making adaptations to their objectives and search routines, thereby achieving more effective alignment. This seemingly straightforward principle has sparked huge interest from both academic and practitioner communities, with debate encompassing a range of disciplinary bases (Easterby-Smith 1997). Rather than building cumulatively upon

earlier concepts and thereby developing a clear empirical focus, many have argued that the field has become fragmented, with little evidence of overlap across disciplinary boundaries (Arthur and Aiman-Smith 2001; Miner and Mezias 1996; Snell 2001). Some scholars have even suggested that the concept may have been intentionally 'mystified' to lend spurious academic credence (Friedman *et al.* 2005). Others show there has been little focused consideration of what it would mean to carry forward ideas offered to their logical conclusion in practice (Ortenblad 2002).

Cohesion or confusion? Towards a typology for organizational learning research

The intention here is by no means to resolve these issues, given that they are attributable in part to the sheer complexity of the process (Berthoin-Anthal *et al.* 2001). Furthermore, there are many excellent review articles already available (e.g. Crossan *et al.* 1999, 2004; Friedman *et al.* 2005; Lawrence *et al.* 2005; Miner and Mezias 1996; Ortenblad 2002; Pawlowski 2001; Vera and Crossan 2004). What is lacking is a line of reasoning that depicts similarities and differences between approaches, highlighting strengths and insights as well as concerns and limitations. The purpose of this review is to compare and contrast approaches in order to analyse similarities and dissimilarities, together with research challenges, for each approach. This is achieved by presenting a comparative framework to categorize the literature (a) according to its prescriptive/explanatory bias and (b) in line with the level of analysis, examining whether there is a focus on the organization as a whole, or instead upon individuals and their work communities. Challenges, or research objectives, are offered for each dimension identified within the framework. The review concludes by offering some 'cross quadrant' suggestions in order to highlight opportunities for future research.

There are several reasons why it is important and timely to develop such a framework. Existing review papers tend to offer unique insights into what organizational learning involves *from a particular perspective*. Vera and Crossan (2004), for example, have examined relationships between organizational learning and leadership, while Lawrence *et al.* have addressed the question of power. Both Barnett (2001) and Pawlowski (2001) are primarily concerned with studies in line with the Cyert and March (1963) tradition, whose work has explored limits in cognition. Other work has drawn upon 'learning organization' rhetoric in an effort to convince managers of the need to invest resources into the creation of a viable learning culture (e.g. Pedler *et al.* 1999). While in many ways such fragmentation offers opportunities for an enriching dialogue across disciplinary boundaries (cf. Easterby-

Smith 1997), there is a danger that researchers and practitioners may become disillusioned and, perhaps, unaware of the wider debate outside narrow parameters. Furthermore, there has been little consideration within existing review literatures of how (relatively) new approaches such as the '4i' framework (Crossan *et al.* 1999) compare with longstanding theories concerned with information-processing (such as Huber 1991), and whether parallels can be drawn between practice-based approaches (e.g. Cook and Brown 1999; Gherardi *et al.* 1998) and other theories seeking to prescribe or explain organizational learning (e.g. the learning curve literature). Similarly, it is timely to locate debate concerning 'the learning organization' as opposed to 'organizational learning' within the wider body of literature (Sun and Scott 2003; Tsang 1997).

The Typology

One has to ask in the light of the issues raised above whether or not it is possible to develop a comparative framework across such a diverse literature. There are indeed significant challenges in doing so. Two key problems appear to be, first, identifying features that certain schools of thought have in common, and, secondly, highlighting significant points of dissimilarity, where approaches can clearly be distinguished from one another. These challenges are compounded by a (comparative) lack of empirical research focusing on clearly defined criteria and providing a basis for assessing the relative contribution of one study in comparison with another (Arthur and Aiman-Smith 2001; Easterby-Smith *et al.* 1999; Miner and Mezias 1996). The challenge, then, is to design a cataloguing system that accommodates both parallels and contradictions, without overly simplifying the literature; further, to portray the breadth and diversity of thinking represented within the literature, while at the same time making reference to potential flaws and limitations.

I have chosen to use a typology. A typology can subdivide the literature in line with characteristics highlighted, drawing upon

empirical research where it exists or alternatively making reference to highly regarded seminal studies. As Bailey (1994, 33) has highlighted: 'a well-constructed typology ... can transform the complexity of apparently eclectic congeries of diverse cases into well-ordered sets of a few rather homogenous types, clearly situated in a property space of a few important dimensions. A sound typology forms a solid foundation for both theorizing and empirical research'. Within a typology, each comparative type is relatively independent of the other, the important point being that there is a basis for comparison across types. Furthermore, such a cataloguing system offers

the opportunity to draw overall conclusions linked to the profiling system presented. Thus, based on a literature review highlighting the distinctive characteristics of each type, it becomes possible to envisage future directions and opportunities as well as challenges and limitations in relation to that particular category (Bailey 1994).

With these points in mind, a typology has been devised to categorize (as far as possible) organizational learning research using a comparative matrix (see Figure 1). Along one continuum, prescriptive/normative approaches to organizational learning are depicted, contrasting with (relatively) more explanatory/descriptive

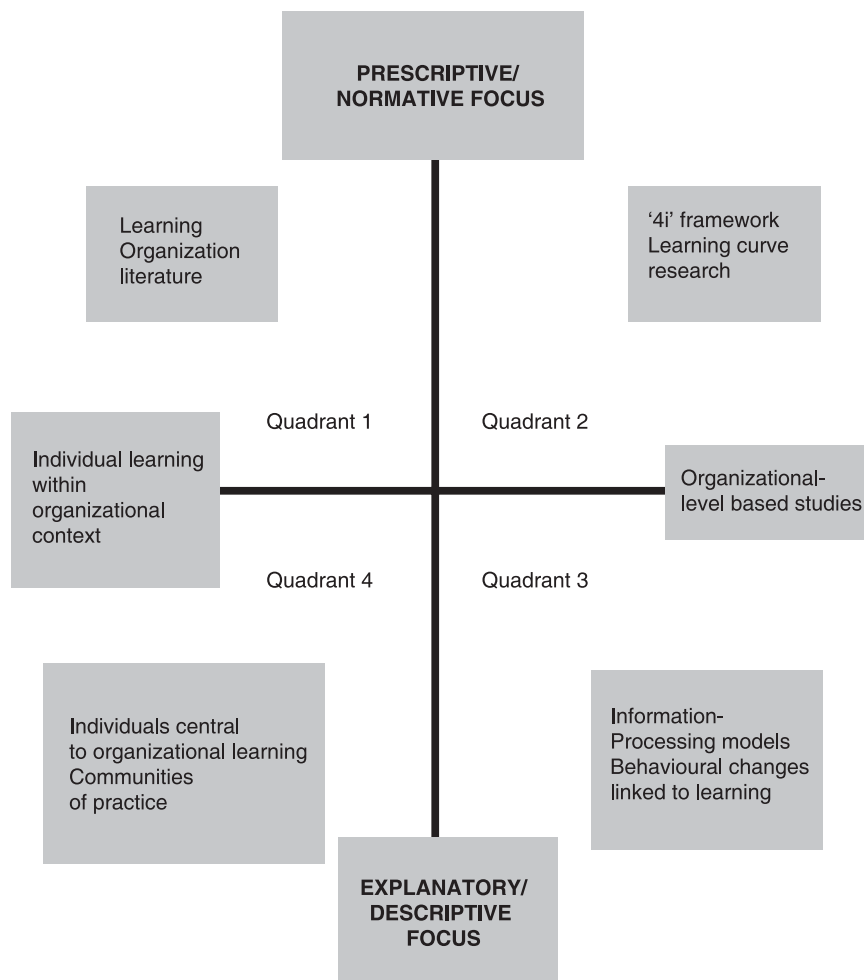


Figure 1. Two axes for categorizing organizational learning literature.

Cohesion or confusion? Towards a typology for organizational learning research

Table 1. Key features of quadrants presented in Figure 1

Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4
Practitioner/consultancy orientation Focus on individual learning within an institutional environment Knowledge 'objectified' Lack of empirical work	Academic orientation 'Normative' rather than critical Focus on outcomes and stages 'Explicit' or 'objectified' knowledge Increasing amount of empirical work	'Change' rather than 'outcomes' Behavioural vs cognitive approaches Dysfunctional learning and 'cognitive limitations' Tacit knowledge acknowledged	Individual characteristics shape learning quality The role of context and 'social engagement' Case study based Ethnographic or action learning methodologies 'Knowing' rather than 'knowledge' Tacit knowledge central

perspectives. Along the other continuum, I examine the level of analysis: are authors concerned about organizational-level factors that represent learning, such as routines and standard operating procedures, or do they instead focus on individuals and/or the communities to which they belong? Table 1 highlights the features of each quadrant in more detail. I then go on to present within each dimension or quadrant what appear to be the key research challenges associated with that category. Thus, I offer two or three research objectives for each type to reflect issues that emerge from reviewing the literature associated with that quadrant (see Table 2).

It is, of course, difficult or impossible to categorize each and every paper in such a diverse and fragmented field in line with a particular type or category. What follows offers a rough approximation, given that while the location of particular studies is at times unequivocal, frequently there may be some ambivalence in terms of where within the framework a certain piece of work is positioned. I have attempted to highlight this ambiguity while simultaneously presenting a reasonably consistent depiction of the framework itself, so that the reader can make a judgment about where a study not specifically discussed might fit within the framework.

Methodological Considerations

Once the parameters for the review have been established, questions then surround the basis

for selecting studies. Here, a number of principles are relevant, given that the purpose of the review is to compare and contrast general trends rather than to categorize each and every paper. First, it was important, in my view, to highlight seminal studies that have significantly influenced thinking and understanding in the field. Thus I have focused on papers that are widely cited, while at the same time exemplifying each of the dimensions portrayed. Secondly, I wanted to capture insights that had been acquired from empirical studies where possible (cf. Dierkes *et al.* 2001; Easterby-Smith *et al.* 1999). Thirdly, I was concerned not to stray into other related domains such as knowledge management. Therefore, although some principles of knowledge creation and knowledge articulation are explored in relation to organizational learning, there is no attempt to categorize knowledge management literature into the typology presented in Figure 1. The key authors considered are presented in Table 2.

In dealing with the first objective ('to highlight seminal studies ...'), I searched using the keywords 'organizational learning' within journals ranked 'world leading' (Aston Journal Rankings 2006), incorporating publications such as the *Academy of Management Journal*, the *Academy of Management Review*, *Organization Science*, *Sloan Management Review* and *Human Relations*. These studies raised issues surrounding the level of analysis (i.e. individual as opposed to organizational) as well as the relative degree of prescription versus description (as defined in Figure 1).

Table 2. Summary of definitions, scholars and research objectives for each quadrant

Quadrant	Example definitions	Example scholars	Future research objectives
1. Individual learning within an organizational context: the prescriptive/normative perspective.	'A learning organizations is one which facilitates the learning of all its members and consciously transforms itself and its context.' Pedler <i>et al.</i> (1999) 'Places where people continually expand their capacity to create the results they truly desire.' Senge (1996)	Argyris and Schon (1978) Argyris (1990) Armstrong and Foley (2003) Garvin (1993) Pedler <i>et al.</i> (1999) Senge (1990) Watkins and Marsnick (1993)	1: To highlight the processes by which individuals implement their learning to promote organizational-level outcomes. 2: To investigate further in empirical terms whether or not measures designed to promote learning are associated with increased organizational effectiveness and performance.
2. Organizational-level focus: the normative perspective.	'The principal means of achieving the strategic renewal of an enterprise.' Crossan <i>et al.</i> (1999) 'In order to measure OL we should operationalise changes in individual learning as well as in organizational elements like social structure, technology and goals ...' Lahteenmaki <i>et al.</i> (2001) 'Organizational learning involves more than individuals becoming better at their particular jobs ...' Argote and Epple (1990)	Argote and Epple (1990) Arthur and Aiman-Smith (2001) Birdi <i>et al.</i> (2004) Bontis <i>et al.</i> (2002) Crossan <i>et al.</i> (1999) Lahteenmaki <i>et al.</i> (2001) Shipton <i>et al.</i> (2005)	3: To highlight further what desirable outcomes one might expect to find where organizational learning is working well, and develop robust scales to capture these dimensions. 4: To examine further the importance of tacit knowledge and investigate the situations within which tacit knowledge exchange underpins organizational learning effectiveness.
3. Organizational-level focus: the explanatory perspective.	'OL is an adaptive process through which firms respond to environmental changes by readjusting their goals, attention rules and search rules ...' Cyert and March (1963) 'OL is the processing of information that changes the range of the organization's potential behaviours. ...' Huber (1991)	Huber (1991) Levinthal and March (1993) Levitt and March (1988) Cyert and March (1963) March (1991) McGrath (2001) Hedberg (1981) Nevis <i>et al.</i> (1995) Shrivistava (1983)	5: To highlight what measures are likely to mitigate the dysfunctional aspects of organizational learning (such as strategic myopia or 'competency traps'). 6: To consider under what conditions codification enables rather than inhibits organizational learning effectiveness.
4. Individuals learning within an organizational context; the explanatory/descriptive perspective.	'all learning takes place inside human heads and an organization learns in one of two ways: by the learning of its members or by ingesting new members who have knowledge that the organization didn't previously have. ...' Simon (1991) 'Working, learning and innovating are interrelated and compatible ...' Brown and Duguid (1991)	Brown and Duguid (1991; 2001) Huysman (1999; 2000) Lam (2000) Scott and Yanow (1993) Simon (1991) Sims (1999) Weick and Roberts (1993)	7: To clarify through further empirical study what social environments foster the learning of individuals and the communities to which they belong. 8: To identify the circumstances where it may or may not be appropriate explicitly to articulate tacit knowledge, and the mechanisms most likely to facilitate this process.

Cohesion or confusion? Towards a typology for organizational learning research

At this stage, I formulated the typology on which the review is based. However, as one would expect, literature here tends to be more explanatory and descriptive than prescriptive. The prescriptive literature has nonetheless substantially influenced thinking on learning in organizations (e.g. Pedler *et al.* 1999; Senge 2006). For this part of the typology (i.e. quadrant 1), it was therefore necessary to search elsewhere; furthermore, to tackle the second research objective ('to capture insights that had been acquired from empirical studies'), it became clear that a wider search was called for. Using electronic databases such as Proquest, Swetswise, Science Direct and Emerald and inputting in turn the terms 'organizational learning' and 'the learning organization', it became possible to address these points. Two criteria were used as a basis for selecting papers: they needed to capture themes raised by leading protagonists for quadrant 1 (see Table 2) and/or to offer empirical insights into any of the four quadrants depicted in Figure 1. The review therefore incorporates a number of less well-known studies on the basis that they provide further substantiation of the framework on which the analysis is based. There was no intention to review the organizational learning literature exhaustively.

Terminology

Along the vertical continuum, two contrasting perspectives are presented (prescriptive versus descriptive). Organizational learning literature spans the two perspectives, and I suggest that studies located in the 'prescriptive' dimension (quadrant 1) highlight the importance of 'laying down rules' (Chambers 2004), i.e. prescribing and advising on future directions. The next quadrant offers research that is more 'normative' than prescriptive; according again to Chambers (2004), the word 'normative' is suggestive of 'guiding standards' rather than sets of rules. Here, there is a contrast with studies found in quadrant 3, which are 'explanatory' in the sense that their purpose is

to explain and depict rather than to offer guidance. Quadrant 4 embodies 'descriptive' research. Again, this categorization is one more of emphasis than of distinction; there is probably less concern within this quadrant than in quadrant 3 in drawing general conclusions; instead, there is an interest in portraying the learning that takes place on a day-to-day basis within a particular context (irrespective of managerial intervention).

As described above, studies portrayed along the horizontal continuum are categorized, depending upon whether there is a focus on the organization as the unit of analysis or on the individual and/or the immediate community within which he or she operates. Some studies have highlighted the importance of individual learning, albeit within an institutional framework, while others have examined the processes whereby organizations as entities learn. Somewhere in-between lie studies examining the close relationship between individual learning and the context within which they are located. The key distinguishing factor is the degree of emphasis on macro-level as opposed to micro-level factors.

Synthesizing the Literature: A Suggested Framework

Introducing a typology to classify organizational learning research requires an understanding of significant themes. A number of issues are apparent upon scrutiny of the literature. Questions have been posed concerning whether organizational learning research, including the so called 'learning organization' literature, is designed to meet the needs of practitioners and consultants or is instead directed at the scholarly and academic communities (Arthur and Aiment-Smith 2001; Easterby-Smith 1997; Friedman *et al.* 2005; Tsang 1997). Some authors have investigated whether or not organizational learning is a source of competitive advantage (Dodgson 1993; Huysman 1999; March 1991), while others have explored how and to what extent it is possible to intervene to enhance performance (Brown and Duguid

1991; Levinthal and March 1991). Contrasting approaches look at whether the organization itself shapes learning activity (Scott and Yanow 1993; Weick and Roberts 1993), and whether and how individuals can transfer their insights into the organizational domain (Crossan *et al.* 1999; Dixon 1994; Kim 1993; Nonaka and Takeuchi 1995). There is, in addition, the challenge of establishing exactly what changes as a result of organizational learning: the behaviour of members (Fiol and Lyles 1985), their cognitive systems, representing potential for behavioural change (Hedberg 1981; Kim 1993) or organizational routines/standard operating procedures (Cyert and March 1963; March and Olsen 1975).

This brief analysis highlights two overriding themes depicted in Figure 1. The first theme concerns whether research exists to *prescribe* or *describe* organizational learning. This issue lies at the heart of debate surrounding organizational learning and competitive advantage and the extent to which intervention is achievable or desirable.

The *prescriptive/normative* literature takes as a premise the notion that there is a positive relationship between organizational learning and performance – the latter defined in terms of profitability, productivity, flexibility/adaptability or innovation (Crossan *et al.* 1999; Dixon 1994; Kim 1993). This broad perspective encompasses much of the learning organization literature (e.g. Argyris 1990; Argyris and Schon, 1978; Armstrong and Foley 2003; Garvin 1993; Pedler *et al.* 1999; Senge 2006; Watkins and Marsnick 1993) as well as some of the organizational learning research directed towards the academic community (e.g. Bontis *et al.* 2002; Shipton *et al.* 2005). Protagonists of this perspective argue that, through implementing systems, processes and mechanisms designed to promote learning, organizations will become more effective entities, in terms of anticipating and pre-empting the competitive environment and the opportunities and challenges it presents.

The *explanatory/descriptive* literature, by contrast, is concerned with understanding how

organizational learning happens, and identifying barriers and inhibiting factors. According to scholars of this persuasion, organizational learning can be dysfunctional and a source of dissension rather than inevitably positivist in orientation (Brown and Duguid 1991; Cyert and March 1963; Huber 1991; March and Olsen 1975; Nonaka and Takeuchi 1995; Zollo and Winter 2002). Key protagonists for these two distinct perspectives are presented in Table 2, together with definitions relevant for these perspectives.

The second theme – concerned with the level of analysis – highlights the extent to which there is a focus on individuals and the communities to which they belong rather than the (learning) characteristics of organizations as a whole. This theme brings together work examining whether and how individuals can transfer their learning into the organizational domain, along with studies exploring how organizations shape learning activity and knowledge construction. Hence, work located along the horizontal continuum of Figure 1 focuses on the organizational-level outcomes of learning, such as rules, procedures and standard operating procedures (Cyert and March 1963; Hedberg 1981; Levinthal and March 1993; Levitt and March 1988; March 1991) and makes a comparison with the literature that examines the processes whereby knowledge is constructed in an organizational environment (e.g. Brown and Duguid 1991 2001; Cook and Brown 1999; Gherardi *et al.* 1998). There is, furthermore, a distinction between scholars who argue that organizations learn as entities, with a capacity to promote knowledge acquisition, interpretation, dissemination and storage (e.g. Huber 1991), and those who argue that the individual is the starting point for learning processes. (e.g. Simon 1991). Again, key definitions and example scholars for this theoretical perspective are depicted in Table 2.

The main distinguishing features of each quadrant are summarized in Figure 1. The next section of the paper examines each of the four quadrants in more detail in order to highlight the distinctive characteristics of

Cohesion or confusion? Towards a typology for organizational learning research

each dimension, and the challenges or research objectives linked with the dimension concerned.

Individuals Learning within an Organizational Context (Quadrant 1): The Prescriptive Perspective

The overall purpose of work located within this quadrant is to offer ideas and suggestions to *prescribe* practice by developing improved learning and collaborative activities (Easterby-Smith *et al.* 1999). Accordingly, literature tends to be written from a practitioner perspective, frequently in language that highlights the positive and inspirational aspects of learning. Senge (2006, 3), for example, defined learning organizations as places ‘where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free’. Thus, learning organizations are visionary ideals, presenting systems in which learning behaviour improves as a result of proactive and empowering intervention by senior management (Sicilia and Lytras 2005). According to some researchers, dialogue is the means of improving communication between individuals and groups; therefore, individuals are required to be increasingly proficient both at articulating the issues they face and simultaneously listening actively to others before evaluating their input (e.g. Senge 2006).

There is also concern with creating the environment within which individuals can learn effectively. Thus, organizations should adopt flat, decentralized organizational structures that facilitate open communication and dialogue (Pedler *et al.* 1999). Team working facilitates individual growth and empowerment, and therefore presents the ideal structural arrangement for organizations concerned to promote an environment conducive to learning (Leonard-Barton 1999). Other HR systems should be developed in line with this aspiration: for example, individuals should have opportunities to participate in organizational decision-making, and reward systems should be designed to

recognize the achievement of learning goals (Armstrong and Foley 2003; Garvin 1993; Wang and Ahmed 2003; Watkins and Marsnick 1993).

The emotive, symbolic language associated with much work located in this quadrant has to some extent masked the problems and difficulties associated with learning. For example, knowledge transmission is seen to happen automatically as a result of introducing and implementing the necessary mechanisms (Huysman 2000). Organization learning follows where individuals are willing to talk openly and honestly about the concerns and anxieties they hold (Argyris 1990; Argyris and Schon 1978). Problems can be addressed by introducing a third party whose task it is to enable individuals to overcome the defensive attributes they exhibit (Argyris 1990; Argyris and Schon 1978). However, as Friedman *et al.* (2005) have pointed out, transferring learning to effect organizational-level change is enormously complicated, depending upon individual, job and structural characteristics, as well as the existing learning culture and reward/recognition systems. Representation of this complexity is not always apparent within the learning organization literature, so that although outwardly there is a concern with organizational-level outcomes (competitive success, profitability, sustainability, etc.), close reading suggests that the individual is the focus of initiatives designed to promote learning.

A further stream highlights the importance of outcomes (e.g. Garvin 1993). Central to debate in the area is the notion that there is a significant and positive relationship between the adoption of measures designed to promote learning and competitive success (e.g. Ellinger 2002). Work located within this quadrant is almost invariably unitary and non-critical in its conceptualization of how and why learning benefits both individuals and organizations, thus the relationship between learning and performance is never seriously questioned (Ortenblad 2002). There is, however, little empirical work available to quantify the positive benefits depicted, which has led to some

cynicism about its practical value (Bartunek 2004; Lahteenmaki *et al.* 2001; Tsang 1997).

This brief review highlights two themes that are deserving of further consideration. There is a need, first, to focus on the mechanisms by which individual learning promotes organizational-level learning and, secondly, to strengthen the prescriptive stance that is a feature of work located here through providing a stronger empirical case for the relationship between learning activity and organizational outcomes.

Based on this analysis, the following objectives are developed for future research:

- *Research objective 1:* To highlight the processes by which individuals implement their learning to promote organizational-level outcomes.
- *Research objective 2:* To investigate further in empirical terms whether or not measures designed to promote learning are associated with increased organizational effectiveness and performance.

Organizational-Level Focus (Quadrant 2): The Normative Perspective

Research located in this quadrant takes a more critical perspective than the 'learning organization' literature and is concerned with understanding the process by which individuals transfer their learning into the organizational domain (Goh 2003; Sun and Scott 2003; Tsang 1997). There is perhaps less consideration of how individuals learn, except in so far as this represents the first stage in the organizational learning cycle (e.g. Crossan *et al.* 1999). There is a developing body of empirical research, some of which is reviewed below. Work represented in this quadrant is *normative* rather than *prescriptive* in the sense that it offers guiding standards rather than the fixed sets of rules that are a feature of learning organization research.

There are nonetheless some points of commonality. Like literature reviewed in the first quadrant, work located here is concerned with measuring outcomes and depicting relationships

between measures designed to promote learning and organizational-level performance (e.g. Bontis *et al.* 2002). Like 'learning organization' research, ideas are frequently portrayed which, despite offering interesting insights, provide little, if any, empirical justification (e.g. Dixon 1994; Kim 1993). This makes it at times problematic to disentangle rhetoric about best practice in organizational learning from phenomena (such as 'mental models'; cf. Kim 1993) that can realistically be captured and measured. Furthermore, like the quadrant described above, much, but not all, of the literature located here focuses on the creation and transfer of explicit, objectified knowledge with little consideration given to the tacit accumulation and exchange of knowledge (e.g. Crossan *et al.* 1999).

There are also similarities with research presented in quadrant 3 (organizational-level learning: the explanatory perspective). Theorists from both quadrants 2 and 3 would on the whole agree that organizational learning has generally positive consequences and that, at its simplest level, involves making adjustments to internal functioning to accommodate perceived threats and opportunities presented by the external environment (cf. Cyert and March 1963). There are other points of similarity; for example, both perspectives apply ideas associated with individual learning to explain learning at organizational level (e.g. Shaw and Perkins 1992). Given this general acceptance, it can be argued that the distinction between literature located in the bottom two quadrants is, at times, more to do with degree and emphasis than with substantive ideological difference.

There are, nonetheless, identifiable differences between the two approaches. In what follows, I outline the main features of research located within this quadrant, and identify potential limitations and areas for further research.

Anticipated Outcomes

Studies located within this quadrant tend to be clearer about anticipated outcomes and the

Cohesion or confusion? Towards a typology for organizational learning research

potential for competitive advantage. One well-known definition describes organizational learning as 'the principal means of achieving the strategic renewal of an enterprise' (Crossan *et al.* 1999, 524). Another has argued that 'organizational learning recommendations become measurable only when they work' (Lahteenmaki *et al.* 2001). In their study of organizational learning practices within 580 UK organizations, Birdi *et al.* (2004) examined both financial performance (employee perceptions of market share and profitability) and HR performance (a measure embracing perceptions of employees' skill, morale and performance). Bontis *et al.* (2002) similarly investigated business performance, asking for employee perceptions of whether 'our organization is successful' and 'individuals are generally happy working here'. Other studies have explored the relationship between organizational learning and innovation, the rationale being that innovation entails learning at both individual and collective levels. Shipton *et al.* (2005) showed, for example, that manufacturing organizations which have in place mechanisms designed to promote learning (such as employee mentoring schemes and regular attachments to other parts of the business) are more innovative than those less committed to implementing such practices.

Other studies have investigated 'strategic renewal' and examined potential relationships between organizational learning and this outcome. Lahteenmaki *et al.* (2001), for example, argued that organizations become more adept at managing change as they adopt practices designed to promote learning. Their definition holds that effectiveness can be measured in terms of individual attitudes (e.g. 'willingness to use teamwork'), decision-making processes, information flow and mutual co-operation. Organizations scoring highly across these dimensions exhibit effective learning, according to this argument. Crossan *et al.* (1999) argued that strategic renewal is achievable to the extent that 'knowledge stocks', i.e. existing knowledge reservoirs, move dynamically through a series of stages involving the individual,

the group and the wider organization. Their model has been tested, but more work is required to clarify 'strategic renewal' and how to measure this outcome (Bontis *et al.* 2002).

'Learning curve' research has investigated firm productivity and the extent to which manufacturing plants vary in their learning where new work processes are introduced. For example, Argote *et al.* (2000) found that a second shift added at a manufacturing plant achieved a level of productivity in two weeks that had taken the first shift many months to achieve. Thus, knowledge had become embedded in the structures and technology of the plant, as well as the thinking processes of those managing the start-up. In another study, Argote and Epple (1990, 924) showed that 'there is great variation in the rate at which organizations learn, ranging from production programmes with little or no learning to those with impressive productivity growth', concluding that factors such as organizational forgetting, employee turnover and incomplete transfer of knowledge from one site to another explained this variation. In other words, organizations will transfer knowledge more effectively where transfer is timely, where turnover rates are relatively low and where the transfer process is well managed and documented.

Transferring Learning from Individuals to the Organization

Although this point is raised in the literature located within the third quadrant, the focus is different here. While the exploratory literature describes the stages involved and highlights dysfunctional aspects (e.g. Huber 1991), the normative literature identifies the features of the transfer process most likely to promote effectiveness. The '4i' framework, for example, depicts four stages: intuiting, interpreting, integrating and institutionalizing (Crossan *et al.* 1999). This model holds that, through 'feed-forward', individuals and groups question existing ways of thinking and operating and present their own ideas while, through

'feedback', insights acquired are implemented across the organizations (in routines, procedures, standard operating procedures, etc.). Other models rest upon similar ideas; for example, both Kim (1993) and Dixon (1994) have highlighted a two-stage process: first, individuals articulating their 'mental models' to others and, secondly, their being receptive to the mental models represented by others. The premise behind these ideas is that individual learning promotes organizational-level learning to the extent that knowledge is made explicit and shared collaboratively with others.

Many of these ideas are drawn from individual learning theory. Thus, for Piaget (1954), the key to learning lies in the mutual interaction of accommodation (changing mental concepts based on experience) and assimilation (integrating experience into existing mental concepts). Kolb (1984) argued that learning takes place as individuals engage in a four-stage cycle: having an experience, reflecting upon it, conceptualizing and planning to deal with the experience differently next time. Although using individual learning theory as a basis for understanding organizational-level learning provides some useful insights, it may lead to misconceptions. Entities are not able to engage in conscious thought processes, and there are difficulties in locating where the learning activity is sited (Scott and Yanow 1993). This potential difficulty also applies to literature located in quadrant three.

Measurement is relatively straightforward for the incremental, 'single loop' learning represented in the 'learning curve' research. It is, however, much more difficult to capture what Senge (2006) described as 'generative' learning, and others have termed 'radical learning' (Miner and Mezias 1996). Depicted at organizational level, this type of learning becomes extraordinarily contentious in research terms (Miner and Mezias 1996). Thus, testing models empirically has proved challenging in practice. Bontis *et al.* (2002), for example, investigated structure, strategy, procedures and culture, i.e. almost every aspect of organizational functioning. Empirical work still appears

to have done little to clarify what lies within the 'black box' linking individual-level learning with organizational-level outcomes (Friedman *et al.* 2005).

With this point in mind, measures could be developed from a more critical perspective, taking into account what outcomes might be desirable for which group or groups of employees (cf. Ortenblad 2002). Another possible criticism is that there is little, if any, consideration of the extent to which unconscious, 'tacit' knowledge influences collective learning. For example, Crossan *et al.*'s (1999) framework has focused exclusively upon learning that can be articulated and made explicit through 'integrating' new ideas with existing knowledge stocks. To develop the field further, more work is needed along the following objectives:

- *Research objective 3:* To highlight further what desirable outcomes one might expect to find where organizational learning is working well, and develop robust scales to capture these dimensions.
- *Research objective 4:* To examine further the importance of tacit knowledge and investigate the situations within which tacit knowledge exchange underpins organizational learning effectiveness.

Organizational-Level Focus (Quadrant 3): The Explanatory Perspective

Research reviewed here can be differentiated from that summarized above in several important respects. First, there is less concern with measuring outcomes than with identifying the changes associated with organizational learning (e.g. Cohen 1991; Duncan and Weiss 1978; Shrivastava 1983; Zollo and Winter 2002). Secondly, there is a concern with dysfunctional aspects and the potential for less than optimum results, even where every effort is made to enhance organizational learning activity (e.g. March 1991). Thirdly, there is a core strand of literature encapsulated within this dimension that highlights the role of *tacit*

Cohesion or confusion? Towards a typology for organizational learning research

knowledge in shaping organizational capability (e.g. Nonaka 1994; Zollo and Winter 2002). Here, though, two distinct categories of scholars have emerged: those who are interested in the tacit dimension and those whose primary focus is the creation, transfer and storage of *explicit* knowledge (e.g. Huber 1991). These categories are reviewed within the same quadrant, because they draw upon similar theoretical traditions. Zollo and Winter (2002), for example, in their model of dynamic capabilities, make reference to issues typically highlighted by scholars such as March (1991) and Huber (1991), e.g. cognitive limitations.

Changes Associated with Organizational-Level Learning

Studies from this quadrant have taken either a behaviourist or a cognitive perspective. In line with the behaviourist approach, theorists have argued that routines and procedures are the 'repositories' of learning in response to external or internal stimuli (Levitt and March 1988; Miner 1992). According to Miner (1992, 180) a routine is 'a coordinated, repetitive set of organizational activities'. Similarly, Levitt and March (1988, 329) have argued that routines are 'forms, rules, procedures, conventions, strategies and technologies' that underpin organizational functioning. Developing a similar line of logic, Zollo and Winter (2002) have argued that knowledge codification (represented in routines and procedures) is crucial for organizations to develop 'dynamic capabilities', arguing that 'codification efforts force the drawing of explicit conclusions about the action implications of experience ...' (p. 11).

Those taking a 'cognitive' perspective have argued that learning represents *potential* rather than actual behavioural change (e.g. Huber 1991). Thus, because the process involves the development of an 'organizational knowledge base', there will be no immediate change in behaviour or action (Nonaka and Takeuchi 1995; Shrivastava 1983). This is in line with theories concerned with 'organizational

memory' (Huber 1991). Memory represents that part of the organization where common knowledge is stored, to be accessed at a later point. Thus memory helps to develop shared understandings relating to knowledge and behaviours (Walsh and Ungson 1991). Other studies have examined cognitive structures (Duncan and Weiss 1978), assumptions (Shrivastava 1983) and cognitive maps (Hedberg 1981). The point is that organizations may not necessarily make changes in behavioural terms as they acquire new knowledge; they may instead acquire the flexibility necessary to make adjustments as the (perceived) need arises.

Another line of thinking has proposed that there are principally two factors that influence the extent to which the change brought about by learning is behavioural (i.e. represented in routines and other 'repositories' of knowledge) as opposed to 'cognitive' (i.e. embedded in collective knowledge and mental maps). The first factor concerns the 'learning orientation' of the organization (Nevis *et al.* 1995). According to this argument, some organizations are concerned with identifying the methods and tools to improve what is already being done, while others focus upon testing the assumptions underlying work activity. Organizations that have a questioning orientation may be better at developing the 'cognitive structures' depicted above, while those concerned with more incremental improvement may be oriented towards the behavioural aspects.

The second factor concerns the extent of turbulence in the external environment. In highly volatile environments, a 'cognitive' orientation may be important, because routines and procedures rapidly outdate and become inappropriate. To develop the 'knowledge base' necessary to question existing routines and protocols may require a different type of learning from that necessary to implement these activities. In line with this way of thinking, studies located in this quadrant have revealed that exposure to different experiences and points of view makes individuals more willing to examine their own mental models

and to make any necessary adjustments (Cohen and Levinthal 1990; Huber 1991; March 1991). Nonaka and Takeuchi (1994) have highlighted the importance of developing a 'spiral of knowledge creation' in this regard, holding that organizations achieve the flexibility required to deal with change where tacit and explicit knowledge are brought together. The key challenge for organizations, according to this perspective, surrounds how to develop a cycle of dialogue and exchange that draws upon both tacit and explicit knowledge. There are, however, still some areas of confusion. For example, which part of the organization holds the 'knowledge base'? Who takes responsibility for devising and managing the 'spiral of knowledge' necessary to enact learning? As Friedman *et al.* (2005) noted, these activities at organizational level are enormously complex and, so far, these questions remain largely unanswered.

Dysfunctional Aspects

According to research presented in this quadrant, learning is an imperfect process. The routines established to guide activity at one point in time may be inappropriate in changing environmental conditions. Thus, practices implemented to promote better environmental alignment may ultimately become a source of inertia (Tushman and Nadler 1996). 'Competency traps', whereby organizations are prevented through a false sense of security from investigating new and different ways of thinking and acting can similarly impede organizational action (McGrath 2001). Some have argued that organizational learning is a change process that will or will not produce improvements (Cohen 1991). Organizations, like people, can learn the right things incorrectly. Or they can learn wrong things correctly (Huber 1991).

Others have proposed that those with responsibility for establishing the strategic direction of the organization do not necessarily learn effectively from the experiences and stimuli to which they are exposed (Levinthal

and March 1993; March 1991). There is a natural tendency for senior managers to focus on efficiency gains, rather than to explore new solutions to emerging needs. According to this argument, organizational learning can become a self-limiting exercise, whereby decision-makers interpret stimuli or information to support, rather than to challenge, existing ways of thinking. Organizations may be myopic, and attach too much importance to information from a particular situation, especially where it has involved past success (Levinthal and March 1993). In addition, 'superstitious learning' – a situation whereby a firm incorrectly concludes that its own actions caused a valuable outcome and repeats that action – can lead to potentially disastrous outcomes for the organization (Levitt and March 1988).

Zollo and Winter (2002) have argued that dysfunctional outcomes result from failing to codify or to implement action arising from learning episodes. In their view, the potential for learning episodes failing to impact positively on performance is acute where the competitive situation is dynamic and there is little or no effort made to capture through codification the insights acquired through experience. In their analysis, routines, rather than constraining or inhibiting action, drive the proposed change forward and highlight the learning and action imperatives that have arisen from particular learning episodes.

This brief review of the literature has identified a number of overriding themes. There is the question of whether learning results in behavioural as opposed to cognitive change; the behaviourist argument holds that organizational learning is represented in routines and procedures, while the cognitive perspective draws upon less tangible factors such as organizational memory and the organizational knowledge base. The extent to which knowledge codification (i.e. instigating rules and routines) facilitates or inhibits learning has preoccupied scholars recently (Zollo and Winter 2002). There is general consensus that information processing limitations inhibit organizational learning effectiveness (Huber

Cohesion or confusion? Towards a typology for organizational learning research

1992), that storing and retrieving knowledge is problematic, and that we so far have little understanding of the circumstances determining whether knowledge codification promotes or impedes progress. Based on the above analysis, two objectives have been developed:

- *Research objective 5:* To highlight what measures are likely to mitigate the dysfunctional aspects of organizational learning (such as strategic myopia or ‘competency traps’).
- *Research objective 6:* To consider under what conditions codification enables rather than inhibits organizational learning effectiveness.

Individuals Learning within an Organizational Context (Quadrant 4): The Descriptive Perspective

This is perhaps the most problematic dimension to define within the framework, given that it encompasses the work of scholars focusing upon individual learning within an institutional environment while also drawing upon the so-called ‘situated learning’ approach. Theorists whose work can be loosely categorized as ‘practice-based’ (falling into the latter category) adopt a variety of methodologies and theoretical insights (see Gherardi and Nicolini 2001), and those whose orientation is the individual rather than the organization similarly draw upon diverse theoretical traditions (e.g. Dodgson 1993; Simon 1991; Weick and Roberts 1993). There is no agenda here to review the entire literature in the two domains, a task that would be unachievable within the constraints of a short review article. The intention is rather to reflect overriding characteristics that make it possible to compare work positioned here with the other three quadrants; it is almost inevitable that some important features are overlooked and possible that other aspects receive undue focus because they lend themselves more readily to comparison. Nonetheless, any review of organizational literature would be incomplete without

incorporating the schools of thought highlighted here, especially given that the themes emerging have received little attention elsewhere in the analysis.

Before I highlight areas of commonality, it is necessary to depict substantial points of difference between the two schools of thought brought together within this quadrant. The first perspective, drawing from social psychology literature, is concerned with understanding how individual learning is constrained or enabled by the environment as well as individual cognitive abilities (e.g. Simon 1991; Weick and Roberts 1993), while the second (the practice-based approach) focuses on the process of knowledge construction within an organizational environment (Brown and Duguid 1991; Cook and Brown 1999; Gherardi *et al.* 1998; Huysman 2000). On a continuum, one would place Simon (1991) to the far left of Figure 1, while those of collectivist orientation (e.g. Brown and Duguid 1991) would be positioned much closer to the central point.

The distinction surrounds the extent to which there is a collective sense of what is important and valued outside individual mental models and cognitive capacities. Taking the individual perspective, Simon (1991, 125), for example, has stated that ‘all learning takes place inside human heads and an organization learns in one of two ways: by the learning of its members or by ingesting new members who have knowledge that the organization didn’t previously have’. In a similar way, Weick and Roberts (1993) have shown that, to achieve qualities such as ‘mindfulness’ and ‘deftness’, individuals have to be trained and socialized so that each person has a deep understanding of both his or her role and that of the work group. According to this perspective, any limitations and constraints on learning are rooted in human cognitive limitations; because individuals experience bounded rationality, and because they vary in terms of the personality and cognitive capacities that they exhibit, there is always the possibility that data will be misinterpreted and less than optimum outcomes achieved.

Authors writing from a social constructivist perspective hold instead that the view of learning as an individual activity is misguided. According to Gherardi *et al.* (1998, 274), 'people and groups create knowledge and negotiated meaning – in terms of words, actions, situations and artifacts'. Social constructivism has stressed the importance of interaction between the individual and his or her environment (Huysman 2000). Context shapes what is learnt and how it is learnt and what is regarded as important, thus learning involves self-reflection and it also involves working with others (Lave and Wenger 1991). Therefore, instead of trying to understand what cognitive processes and conceptual structures are involved, the social perspective of learning examines the social engagements that provide a useful context for learning (Cook and Brown 1999). Groups create knowledge and attribute meaning to certain words, actions and artefacts. This gives rise to a collective identity in terms of what activities are valued and how efforts should best be directed (Brown and Duguid 1991).

Although there are clearly important distinctions between the two schools of thought, there are identifiable features that distinguish work located here from that described elsewhere in the framework. There is an interest in understanding what triggers individual learning, whether it be through understanding the role of cognition and mental models (Simon 1991; Weick and Roberts 1993) or through exploring what characteristics individuals require to engage effectively with others. Gherardi *et al.* (1998), for example, examining the progress of graduate apprentices within the Italian building industry, found that individual motivation and willingness to search for learning opportunities played a key role in determining which apprentices would successfully complete their training. This line of thinking is in stark contrast to perspectives examined within quadrants 2 and 3, where the organization is very much the unit of analysis. In many ways, ideas portrayed here bear comparison with work located in quadrant 1. Both

quadrants on the left-hand side of Figure 1 are to some extent concerned with individual learning and with developing the mechanisms necessary to capture and apply learning. Furthermore, the question of context highlighted by those writing from a 'practice-based' persuasion is reflected in the learning organization literature, where there is interest in designing work environments to facilitate exchange and collaboration (e.g. Pedler *et al.* 1999).

What further distinguishes work located in quadrant 4 from the other three perspectives concerns the way in which knowledge is depicted and the position of tacit versus explicit knowledge. This theme forms a central part of the 'situated learning' approach, which examines ideas surrounding 'knowing' rather than 'knowledge' (Cook and Brown 1999). 'Knowing' involves gradually and almost subconsciously absorbing understanding what is required to perform well, including the questions to ask, the language to use, how and where best to focus efforts. Through storytelling, for example, communities of practitioners share their experiences of work using their own unique language and terminology (Brown and Duguid 1991). Accordingly, the way to promote organizational learning is to recognize its tacit dimension and to support communities as they develop the mechanisms required for sharing knowledge. By contrast, the various cycles of organizational learning portrayed in quadrants 2 and 3 deal largely with the creation of explicit knowledge and the process whereby such knowledge is embedded into organizational activity (e.g. Crossan *et al.* 1999). Some theorists whose work is reviewed in quadrant 3 take into account the tacit, implicit aspects of knowledge creation (e.g. Nonaka 1994; Zollo and Winter 2002) but their concern is to build on tacit knowledge creation through actively making explicit and/or codifying this element. The 'practice-based' approach by contrast holds the 'tacit' aspects of knowledge creation and articulation to be central.

Another point of distinction between this quadrant and work portrayed elsewhere concerns the descriptive focus evident here.

Cohesion or confusion? Towards a typology for organizational learning research

While quadrant 3 is explanatory in the sense that work located here tends to draw general conclusions, much of the research reviewed in quadrant 4 takes an ethnographic case-by-case approach that frequently makes generalization inappropriate. Thus, learning issues that arise within specific contexts (arguably) have limited applicability outside the specific domain investigated. This descriptive and analytical approach differentiates literature reviewed in this quadrant from the more practitioner-orientated literature portrayed in quadrant 1 and the 'outcomes orientated' literature examined in the second quadrant.

A number of themes have been raised in this section. First, there is the distinction between the two schools of thought incorporated within the quadrant. This review briefly touches upon two streams of literature, highlighting, on the one hand, the centrality of the individual and, on the other, emphasizing the importance of interaction between individuals and their environments. Secondly, there is the question of knowledge and 'knowing' that distinguishes certainly the practice-based literature from work located elsewhere in the typology. Thirdly, there is the descriptive element; work located here tends to be case-study based and frequently ethnographic in orientation (Brown and Duguid 1991; Gherardi *et al.* 1998) in contrast to work presented in any of the other three quadrants.

These themes give rise to a number of issues and questions. The research style, certainly for the practice-based literature, at times presents difficulties in terms of developing general principles that could be applied elsewhere. Furthermore, and relatedly, there are issues of accessibility to wider communities, especially since there tends to be relatively little emphasis on practical implications. There is perhaps a lack of clarity in terms of whether and how tacit knowledge is communicated and shared; for example, in what circumstances should individuals and their communities make explicit the knowledge base that they hold, and where might the tacit exchange of knowledge (through socialization, for example)

be sufficient? This is especially the case given that, according to this perspective, knowledge is created, shared and implemented almost subconsciously through day-to-day work practice; therefore, it is difficult to envisage how to promote best practice.

Two research objectives based on this analysis are as follows:

- *Research objective 7:* to clarify through further empirical study what social environments foster the learning of individuals and the communities to which they belong.
- *Research objective 8:* To identify the circumstances where it may or may not be appropriate explicitly to articulate tacit knowledge, and the mechanisms most likely to facilitate this process.

Discussion

This review has categorized the literature through presenting four relatively self-contained quadrants. Each quadrant or perspective has a unique contribution to offer, and each has a number of flaws or limitations. Suggestions for future research highlight how the field might progress within each quadrant. It is possible, however, that insights from one quadrant can, at times, inform and guide research questions derived from an alternative position in the framework. Many would argue, for example, that learning occurs through making connections *across* divergent fields (Dierkes *et al.* 2001; Easterby-Smith 1997). Through drawing parallels across perspectives, one can gain new insights, sometimes through reconceptualizing basic assumptions, sometimes through building on existing ideas.

Thus, the learning organization literature portrayed in quadrant 1 presents an idealized vision of best practice, whereas research reviewed in the other three quadrants is (to varying degrees) more critical and concerned about the processes that may explain whether or not such a vision can be achieved. Both approaches complement one another, in that the first offers the vision and energy required

to initiate and sustain change, while the second (any one of the other three quadrants) provides an in-depth analysis of the challenges involved. Building on this idea, there are further synergies across the prescriptive/normative and explanatory/descriptive literature. The social constructivist literature (quadrant 4), for example, has highlighted the importance of sense-making in communities, suggesting that collaborative activities bringing individuals together to discuss puzzling issues is a crucial aspect of collective learning (e.g. Gherardi *et al.* 1998). How such collective learning can be encouraged is addressed by prescriptive theories holding that meaning exists where there is an overall vision or understanding (Senge 2006). That overall understanding enables the parties concerned to reach agreement, based on discussion and co-operation (Garvin 1993).

Other cross-quadrant synergies are to do with the dysfunctional aspects of learning. Information-processing schools of thought, for example, depicted by theorists like Huber (1991) (quadrant 3, an explanatory quadrant) hold that there are difficulties in arriving at the 'correct' solution to a learning problem, to do with information overload or incorrectly interpreting data. Theories such as the '4i' framework (quadrant 2, a normative quadrant) would hold that these difficulties are tempered through observing a systematic sequence of interpreting, integrating and institutionalizing knowledge. There are further parallels between the focus on learning through practice depicted in quadrant 4 and the importance attached in quadrants 2 and 3 to learning through work-based activity, guided by experienced practitioners acting as mentors or coaches (e.g. Kim 1993). More prolonged consideration would doubtless reveal further parallels and synergies across quadrant boundaries.

Concluding Comments

The comparative framework depicted here provides a basis for researchers and practitioners to make sense of a diverse and fragmented

literature. Using the typology, one can compare schools of thought that are not generally considered alongside one another; for example, information-processing theories are portrayed in quadrant 3 and situated learning ideas in the next quadrant. Studies surrounding learning organizations are compared not just with 'organizational learning' literature in a general sense, but with various different perspectives (as portrayed in quadrants 2, 3 and 4). Theories outlining the stages involved in transferring learning from individuals to the wider organization can be considered in the light of the work of March and others concerning cognitive limitations.

A limitation of this review is that *depth* has been sacrificed for *breadth*. Key features associated with one approach or another may have been overlooked or excluded from the analysis because of a lack of space or because those features do not lend themselves readily to comparison. Furthermore, given the plethora of published studies addressing this topic, the intention has been to present a reasonably clear framework rather than conducting a comprehensive review of the literature, thus some (possibly highly regarded) studies have not been explicitly considered. The logic is that, given a clear framework, those interested in the field can decide for themselves where studies not specifically mentioned might be located.

In any case, breadth has a number of advantages over depth. Through gaining an understanding of key trends in an overall sense, one can make a judgment about the significance of particular studies in relation to specific research questions. It becomes possible to detect synergies across quadrant boundaries in a way that is not feasible outside such a comparative framework. One can focus on what appear to be the most significant features of each quadrant, and plan for research that may or may not draw upon insights derived from other parts of the framework. In sum, the typology reflects and categorizes current literature, with the intention of highlighting current thinking and possible future directions.

Cohesion or confusion? Towards a typology for organizational learning research

If doing so goes some way towards mitigating confusion and promoting a degree of coherence and/or cohesion in this complex field of study, the effort has been worthwhile.

Acknowledgements

Thanks and acknowledgements to John Sillince, Pawan Budhwar, Felix Brodbeck, Rolf Van Dick and Kamal Birdi and for their helpful comments on earlier drafts. Thanks are also due to two anonymous reviewers for their time and effort.

Note

- 1 A version of this paper was presented at the European Association of Work and Organizational Psychology conference, Istanbul, May 2005.

References

- Argote, L. and Epple, D. (1990). Learning curves in manufacturing. *Science*, **247**, 920–924.
- Argote, L., Ingram, P. and Moreland, R. (2000). Knowledge transfer in organizations: learning from the experience of others. *Organizational Behaviour and Human Decision Sciences*, **82**(1).
- Argyris, C. (1990). *Overcoming Organisational Defenses: Facilitating Organisational Learning*. Boston, MA: Allyn & Bacon.
- Argyris, C. and Schon, D. (1978). *Organisational Learning: a Theory of Action Perspective*. Reading, MA: Addison-Wesley.
- Armstrong, A. and Foley, P. (2003). Foundations for a learning organization: organization learning mechanisms. *The Learning Organization*, **10**, 74–82.
- Arthur, J. and Aimant-Smith, L. (2001). Gainsharing and organizational learning: an analysis of employee suggestions over time. *Academy of Management Journal*, **44**(4), 737–754.
- Bailey, K. (1994). Typologies and taxonomies: an introduction to classification techniques. *Sage University Paper No. 102*. London: Sage.
- Barnett, C. (2001). Re-thinking organizational learning theories: a review and synthesis of the primary literature. Working Paper, University of New Hampshire.
- Bartunek, J. (2004). Has organizational learning outlasted learning organizations? Implications for creating rigorous and actionable knowledge. Paper presented at the Academy of Management Conference, New Orleans, USA.
- Berthoin-Antal, A., Dierkes, M., Child, J. and Nonaka, I. (2001). Organizational learning and knowledge: reflections on the dynamics of the field and challenges for the future. In Dierkes, M., Berthoin-Antal, A., Child, J. and Nonaka, I. (eds), *Handbook of Organizational Learning and Knowledge*. Oxford: Oxford University Press, pp. 921–939.
- Birdi, K., Wood, S., Patterson, M. and Wall, T. (2004). Individual, team and organizational learning practices and organizational performance. Paper presented at the Academy of Management Conference, New Orleans, USA.
- Bontis, N., Crossan, M. and Hulland, J. (2002). Managing organizational learning systems by aligning stocks and flows. *Journal of Management Studies*, **39**(4), 437–469.
- Brown, J.S. and Duguid, P. (1991). Organisational learning and communities of practice: towards a unified view of working, learning and innovating. *Organisation Science*, **2**(1), 40–57.
- Brown, J.S. and Duguid, P. (2001). Knowledge and organization: a social-practice perspective. *Organization Science*, **12**(2) 198–213.
- Chambers Concise English Dictionary* (2004). Edinburgh: Chambers Harrap.
- Cohen, M.D. (1991). Individual learning and organizational routines: emerging connections. *Organization Science*, **2**, 135–49.
- Cohen, M.D. and Levinthal, D. (1990). Absorptive capacity: a new perspective on learning and innovation. *Administrative Science Quarterly*, March, 128–152.
- Cook, S. and Brown, J.S. (1999). Bridging epistemologies: the generative dance between organizational knowledge and organizational knowing. *Organization Science*, **10**(4), 381–400.
- Crossan, M., Lane, H. and White, R. (1999). An organizational learning framework: from intuition to institution. *Academy of Management Review*, **24**(3), 522–537.
- Cyert, R.M. and March, J. (1963). *A Behavioural Theory of the Firm*. Englewood Cliffs, NJ: Prentice Hall.
- Dierkes, M., Berthoin-Antal, A., Child, J. and Nonaka, I. (eds) (2001). Introduction: Finding paths through the handbook. *Handbook of Organizational Learning and Knowledge*. Oxford: Oxford University Press, pp. 1–7.

- Dixon, N. (1994). *The Organisational Learning Cycle: How We Can Learn Collectively*. London: McGraw-Hill.
- Dodgson, M. (1993). Organizational learning: a review of some literatures. *Organizational Studies*, **14**, 375–394.
- Easterby-Smith, M. (1997). Disciplines of organisational learning: contributions and critiques. *Human Relations*, **50**(9), 1085–1113.
- Easterby-Smith, M., Burgoyne, J. and Araujo, L. (1999). *Organisation Learning and the Learning Organization*. London: Sage.
- Ellinger, A.D. (2002). The relationship between the learning organization concept and firms' financial performance: an empirical assessment. *Human Resource Development Quarterly*, **13**(1), 5–22.
- Fiol, C.M. and Lyles, M.A. (1985). Organizational learning. *Academy of Management Review*, **10**(4), 803–813.
- Friedman, V.J., Lipshitz, R. and Popper, M. (2005). The mystification of organizational learning. *Journal of Management Inquiry*, **14**(1), 19–30.
- Garvin, D.A. (1993). Building a learning organization. *Harvard Business Review*, March–April, 75–84.
- Gherardi, S. and Nicolini, D. (2001). The sociological foundations of organizational learning. In Dierkes, M., Berthoin-Antal, A., Child, J. and Nonaka, I. (eds), *Handbook of Organizational Learning and Knowledge*. Oxford: Oxford University Press, Ch. 2, pp. 35–60.
- Gherardi, S., Nicolini, D. and Odella, F. (1998). Toward a social understanding of how people learn in organizations. *Management Learning*, **29**(3), 273–297.
- Goh, S. (2003). Improving organizational learning capability: lessons from two case studies. *The Learning Organization*, **10**(4), 227–236.
- Hedberg, B. (1981). How organisations learn and unlearn. In Nystrom, P.C. and Starbuck, W.H. (eds), *Handbook of Organisational Design*. London: Cambridge University Press.
- Huber, G. (1991). Organisational learning: the contributing processes and the literature. *Organisation Science*, **2**(1), 88–115.
- Huysman, M. (1999). Balancing the biases: a critical review of the literature on organizational learning. In Easterby-Smith, M., Burgoyne, J. and Araujo, L. (eds), *Organisation Learning and the Learning Organization*. London: Sage.
- Huysman, M. (2000). An organizational learning approach to the learning organization. *European Journal of Work and Organizational Psychology*, **9**(2), 133–145.
- Kim, D.H. (1993). The link between individual and organisational learning. *Sloan Management Review*, Fall, 37.
- Kolb, D.A. (1984). *Experiential Learning; Experience As the Source of Learning and Development*. Englewood Cliffs, NJ: Prentice Hall.
- Lahteenmaki, S., Toivonen, J. and Mattila, M. (2001). Critical aspects of organizational learning and proposals for its measurement. *British Journal of Management*, **12**, 113–129.
- Lam, A. (2000). Tacit knowledge, organizational learning and societal institutions: an integrated framework. *Organization Studies*, **21**, 487–513.
- Lawrence, T., Mauws, M., Dyck, B. and Kleysen, R. (2005). The politics of organizational learning: integrating power into the 4i framework. *Academy of Management Review*, **30**(1), 180–191.
- Lave, J. and Wenger, E. (1991). *Situated Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.
- Leonard-Barton, D. (1995). *Wellsprings of Knowledge; Building and Sustaining the Sources of Innovation*. Boston: Harvard Business School Press.
- Levinthal, D.A. and March, J.G. (1993). The myopia of learning. *Strategic Management Journal*, **14**, 95–112.
- Levitt, B. and March, J.G. (1988). Organizational learning. *Annual Review of Sociology*, **14**, 319–340.
- March, J. (1991). Exploration and exploitation in organizational learning. *Organization Science*, **2**(1).
- March, J. and Olsen, J.P. (1975). The uncertainty of the past: organizational learning under ambiguity. *European Journal of Political Research*, **3**, 147–171.
- McGrath, R.G. (2001). Exploratory learning, innovative capacity and managerial oversight. *Academy of Management Journal*, **44**(1), 118–131.
- Miner, A.S. (1992). Evolutionary learning: an exploratory study of change through the retention of planned and unplanned jobs. Paper presented at the Academy of Management Conference, Las Vegas, Nevada.
- Miner, A. and Mezas, S. (1996). Ugly duckling no more: pasts and futures of organizational learning research. *Organizational Science*, **7**(1), 88–99.
- Nevis, E.C., DiBella, A.J. and Gould, J.M. (1995). Understanding organisations as learning systems. *Sloan Management Review*, **36**, 73–90.

Cohesion or confusion? Towards a typology for organizational learning research

- Nonaka, I. (1994) A dynamic theory of organizational knowledge creation. *Organisation Science*, **5**(1), 14–37.
- Nonaka, I. and Takeuchi, H. (1995). *The Knowledge Creating Company*. Oxford: Oxford University Press.
- Ortenblad, A. (2002). Organizational learning: a radical perspective. *International Journal of Management Reviews*, **4**, 87–100.
- Pawlowski, P. (2001). The treatment of organizational learning in management science. In Dierkes, M., Berthoin-Antal, A., Child, J. and Nonaka, I. (eds), *Handbook of Organizational Learning and Knowledge*. Oxford: Oxford University Press, Ch. 3, pp. 61–88.
- Pedler, M., Burgoyne, J. and Boydell, P. (1999). *The Learning Company: A Strategy for Sustainable Development*. Maidenhead: McGraw-Hill.
- Piaget, J. (1954). *The Construction of Reality in the Child*. New York: Basic Books.
- Scott, D.N. and Yanow, D. (1993). Culture and organizational learning. *Journal of Management Inquiry*, **2**(4), 430–459.
- Senge, P. (2006). *The Fifth Discipline: the Art and Practice of the Learning Organization*. New York: Double Day.
- Shaw, R.B. and Perkins, D.N.T. (1992). Teaching organizations to lead: the power of productive failures. In Nadler, D.A., Gerstein, M.S. and Shaw, R.B. (eds), *Organizational Architecture*. San Francisco: Jossey-Bass, pp. 175–191.
- Shipton, H., Fay, D., West, M., Patterson, M. and Birdi, K. (2005). Managing people to promote innovation. *Creativity and Innovation Management*, **14**(2), 118–128.
- Shrivastava, P. (1983). A typology of organizational learning systems. *Journal of Management Studies*, **20**(1), 7–28.
- Sicilia, M.A. and Lytras, M.D. (2005). Scenario-oriented reusable learning object characterizations. *International Journal of Knowledge and Learning*, **1**(4), 332–341.
- Simon, H. (1991). Bounded rationality and organizational learning. *Organization Science*, **2**(1), 175–187.
- Snell, R.S. (2001). Moral foundations of the learning organization. *Human Relations*, **54**(3), 319–342.
- Sun, P. and Scott, J. (2003). Exploring the divide – organizational learning and learning organization. *The Learning Organization*, **10**(4), 205–215.
- Tsang, E.W.K. (1997). Organizational learning and the learning organization: a dichotomy between descriptive and prescriptive research. *Human Relations*, **50**(1), 73–89.
- Tushman, M. and Nadler, D. (1996). Organizing for innovation. In Starkey, K (ed.), *How Organizations Learn*. London: International Thompson Business Press.
- Vera, D. and Crossan, M. (2004). Strategic leadership and organizational learning. *Academy of Management Review*, **29**(2), 222–240.
- Walsh J.P. and Ungerson, G.R. (1991). Organizational memory. *Academy of Management Review*, **16**(1), 57–91.
- Wang, C.L. and Ahmed, P. (2003). Organizational learning: a critical review. *The Learning Organization*, **10**(1), 8–17.
- Watkins, K. and Marsnick, V. (1993). *Sculpting the Learning Organization: How Organizations Learn and Change*. San Francisco: Jossey Bass.
- Weick, K. and Roberts, K. (1993). Collective mind in organizations. *Administrative Science Quarterly*, **38**, 357–381.
- Zollo, M. and Winter, S.G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, **13**(3), 339–351.

Helen Shipton is from Aston Business School, Birmingham B4 7ET, UK.