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Organizational Learning & The Development of Shared Understanding: Evidence in Two Public Sector Organizations

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**ORGANIZATIONAL LEARNING &
THE DEVELOPMENT OF SHARED
UNDERSTANDING: EVIDENCE IN TWO
PUBLIC SECTOR ORGANIZATIONS**

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ABSTRACT

Organizational learning is widely touted as enhancing organizational effectiveness, but, as yet, little evidence for the existence of this construct has been provided by researchers. It has however been suggested that the existence of, changes in and development of shared understanding in organizations are indicative of the learning that has occurred across those organizations. This paper presents the results of research exploring this idea in which the extent of shared learning, in respect of new business processes in two public sector organizations is compared with the learning orientation, in terms of an active versus passive approaches, evidenced by those organizations. Results reveal some important outcomes relating to the interaction of managers' and employees' understanding of the new business issues under investigation, and the relationships between organizational learning orientations and the take up of new ideas across organizations.

Organizational learning has been an issue in management theory and research since the 1960's (Cangelosi and Dill, 1965). However, it has come to pre-eminence since the 1990's, in recognition of its potential as a key driver for competitive advantage and organizational effectiveness (Crossan and Guatto, 1996; DeGeus, 1988; Hawkins, 1994). Anecdotal evidence for organizational learning has been afforded by descriptive studies in various settings, including manufacturing (Pedler, Burgoyne and Boydell, 1988), energy (Carroll, 1998; Prokesh, 1997), financial services (Nevis, DiBella and Gould, 1995), and automotive (Bower, 1993; Nevis, DiBella and Gould, 1995) industries. Yet, despite this and ongoing theoretical interest, there has been less empirical evidence afforded for organizational learning's existence. This is, in part, a result of the complexity of the learning process in organizations (Crossan, Lane, White and Djurfeldt, 1995; Easterby-Smith, 1997; Miner and Mezias, 1996), which creates considerable challenges for researchers seeking to identify if, and how organizations learn (Lahteenmaki, Mattila and Toivonen, 2001). One key question concerns how learning is manifested across organizations. Organizational learning can be seen as occurring when individuals share the understanding developed through their own learning to form shared understanding or beliefs that allow the organization to work in common ways (Klimecki and Lassleben, 1998; Lee, Courtney and O'Keefe, 1992; Williams, 2001). Argyris (1994) suggests that it is kind of learning that is crucial to organizational effectiveness. Furthermore, the extent of shared learning will be linked potentially to the learning approach or orientation adopted by an organization (*ibid.*). Organizations that are more 'active' in their learning are, therefore, more likely to evidence this learning in wider and more inclusive forms for shared learning. This is particularly likely to be the case when an organization, meeting changes to business and/or environmental conditions, has had to face the challenge of learning something new. The development of new shared understanding in organizations is required from those organizations to respond to change, and its existence could, therefore, be indicative of organizational learning.

This paper reports research looking at the nature of shared understanding in two organizations, following changes in their working practices. In each organization the research concentrated on a 'new' (recently adopted) business process, and was undertaken in two phases. In Phase One a

representative sample of senior managers from each organization was interviewed and causal cognitive maps representing their understanding of the 'new' organizational issue were drawn. The two organizations considered are local councils providing public services in the UK. In each, senior management had nominated the particular business issue taken as a focus for the cognitive mapping exercise and a subsequent questionnaire survey. In Phase Two a questionnaire survey was adopted, through which the managers' understanding identified in Phase One could be tested against employees' perceptions. Items for an organizationally specific instrument were drawn from the causal maps obtained in Phase One, treating these as a 'expert-sample' for item generation. This instrument was administered alongside another that explored active-passive learning orientations in each organization (Sadler-Smith, Spicer and Chaston, 2001). The nature and extent of the shared understanding in the two study organizations is considered below, as are relationships between each organization's learning orientation and extent of shared understanding evidenced.

Initially, the theoretical framework informing this research which draws on work undertaken under the auspices of organizational learning to identify the relevance of developing shared understanding is described below. Research questions and hypotheses are then outlined, and the methods employed described. The outcomes of the research are then presented and discussed. The implications of the study for research are summarized and the paper concludes by identifying the importance and meaning of results for learning organizationally and the development of shared understanding.

ORGANIZATIONAL LEARNING

Over the last decade, learning in organizations has been widely discussed in the management literature and within this, two allied streams of interest, concerned with the either the 'learning organization' and 'organizational learning', have emerged. Unfortunately, some writers have tended to confuse these, but there is now a growing recognition that we can and should distinguish between them. Tsang (1997) makes the point, which is echoed by others (for example Easterby-Smith, and Araujo, 1999; Robinson, 2001; Williams, 2001) that work under the auspices of organizational learning has tended to be analytical and descriptive, concerned with identifying the processes and mechanisms for

learning in organizations. Conversely, work most identifying with the learning organization is typically normative, action-orientated and potentially prescriptive, tending to define the features of the 'ideal' organization which supports, fosters and encourages learning. Distinguishing in this way is helpful because it adds clarity and consistency to our theorizing.

The research described here is concerned with identifying, analyzing and describing learning mechanisms which support the development of shared understanding, and hence identifies with an organizational learning approach.

Even when narrowing our focus to just organizational learning, we are still faced with a

TABLE 1
ORGANIZATIONAL LEARNING: EXAMPLE DEFINITIONS

<i>Source</i>	<i>Definition</i>
Anderson, Gustavsson & Merlin (1995: 31)	<ul style="list-style-type: none"> • "Organizational learning occurs through shared insights, knowledge and mental models and builds on past knowledge and experience."
Edmondson & Moingeon (1998: 12)	<ul style="list-style-type: none"> • "A process in which an organizations members actively use data to guide behavior in such a way as to promote the ongoing adaption of the organization."
Fojt (1995: 5)	<ul style="list-style-type: none"> • "Organizational learning is a set of processes to help people create new knowledge, share understanding and continuously improve themselves and the company."
Hayes & Allinson (1998: 12)	<ul style="list-style-type: none"> • "Organizational (collective) learning involves sampling the environment, including the effects of past behavior, and using the information made available by this process to modify the mental models, schema or cognitive maps that guide behavior."
Huber (1996: 822)	<ul style="list-style-type: none"> • "An organization learns when, through its processing of information, it increases the probability that its future actions will lead to improved performance."
Kim & Senge (1994: 277)	<ul style="list-style-type: none"> • "By organizational learning we mean the development of new organizational capabilities. To learn for an individual, group, or larger organization, is to enhance one's capabilities in reliable and reproductive ways."
March & Olsen (1975: 168)	<ul style="list-style-type: none"> • "Organizations and the people in them learning from their experience. They act, observe the consequences of their action, make inferences about those consequences, and draw implications for future action."
Shrivastava (1983: 15)	<ul style="list-style-type: none"> • "Organizational learning refers to the process by which the organizational knowledge base is developed and shaped."
Simon (1991: 125)	<ul style="list-style-type: none"> • "All learning takes place inside individual human heads; an organization learns in only two ways: (a) by the learning of its members, or (b) by ingesting new members who have knowledge the organization didn't previously have."
Snell & Chak (1996: 6)	<ul style="list-style-type: none"> • "Organizational Learning entails meaningful change in the processes, structures, assumptions or concerns connecting individual members."
Snyder & Cummings (1998: 875)	<ul style="list-style-type: none"> • "Learning is organizational to the extent that: (1) it is done to achieve organization purposes; (2) it is shared or distributed among members of the organization; and (3) learning outcomes are embedded in the organizations systems, structures and culture."
Stata (1989: 64)	<ul style="list-style-type: none"> • "Organizational Learning occurs through shared insights, knowledge and mental models ...[and] builds on past knowledge and experience - that is memory."
Swieringa & Wierdsma	<ul style="list-style-type: none"> • "By the term 'organizational learning' we mean the changing of organizational behavior."

massive literature. For example, there exists an abundance of alternative definitions for the term. Representative examples of these are shown in Table One, and this list is by no means exhaustive. Within these, it is possible to identify a number of key themes. Firstly, all the definitions exhibited identify with a process view of learning, in line with the driving perspective behind organizational learning identified above. Secondly, the majority of alternative definitions identify this process as one of change (e.g. Edmondson and Moingeon, 1998; Shrivastava, 1983). This is usually seen as resulting in improvements in efficiency and effectiveness (e.g. Fojt, 1995; Huber, 1996; Kim and Senge, 1994; Snell and Chak, 1996), often couched in behavioral terms (Edmondson and Moingeon, 1998; Hayes and Allinson, 1998; Swieringa and Weirsdma, 1992). Thirdly, a number of the definitions make the individual's role explicit in learning organizationally (e.g. Kim and Senge, 1994; March and Olsen, 1975; Simon, 1991).

The consensus demonstrated by the exemplars in Table One is that organizational learning is a process, driven by an organization's individuals (members), that leads to developmental change (improvement) in behavior within that organization, and it is this view of learning that is explored below. This, however, is a view with which some would contend. Significantly, not all recognize the need for learning to result in increased effectiveness or changed behavior (Huber, 1991; Sutton, 1994), and suggest that it is possible to learn incorrectly, learn incorrect information, or not learn at all. Choosing to see

learning as developmental, does not mean that these circumstances do not exist. What these critics are identifying, is failures in effective learning, and whilst these can and do happen, in exploring organizational learning it makes sense to start by confirming its existence and extent. This is not to deny that failings can and do occur, rather, consideration of such failings is not an issue when defining learning.

Whilst the above brief discussion of definitions highlights the key concepts within organizational learning theory, it does little more than scratch the surface of this multifaceted field of study. A complete review of organizational learning theory is outside the remit of this paper. For readers interested in this, both Dodgson (1993) and Easterby-Smith (1997) provide extensive and critical reviews. However, in the context of the present study, there are two critical aspects of organizational learning research and theory that require further elucidation, the pivotal role of shared understanding and the notion of two levels of learning.

Two Levels of Learning

In the literature on organizational learning one of the most pervasive ideas is that different forms of learning are evidenced through change occurring at differing levels. In describing these differing levels, researchers typically make distinctions in terms of two types or forms, with a number of authors identifying what have been collectively described as 'higher' and 'lower' order forms of learning (Sadler-Smith, Spicer and Chaston, 2001).

TABLE 2
TWO LEVELS OF LEARNING: ALTERNATIVE DESCRIPTORS

<i>Author(s)</i>	<i>Learning levels</i>
Argyris & Schon (1978)	single-loop - double-loop
Bateson (1973)	learning I - learning II
Corsini (1987)	know-how - know-what
Dibella, Nevis & Gould (1996)	incremental - transformational
Dodgson (1991)	tactical - strategic
Fiol & Lyles (1985)	lower - higher
Kim (1993)	operational - conceptual
Klimeki & Lassleben (1998)	reactive - proactive
Miner & Mezias (1996)	incremental - radical
Pedler, Burgoyne & Boydell (1997)	implementing - improving
Sadler-Smith, Spicer & Chaston (2001)	passive - active
Senge (1990)	adaptive - generative
Snell & Chak (1996)	adaptation - development
Stein & Vandenbosch (1996)	lower-order - higher-order
Virany, Tushman & Romanelli (1992)	first-order - second-order

Table Two identifies a number of these. Lower forms, such as adaptive (Senge, 1990), reactive (Klimeki and Lassleben, 1998) or single-loop (Argyris and Schon, 1974; 1978) are about being able to cope with existing environments, issues and challenges in better ways and are typically manifested through the incremental improvement of existing working practices and understanding. Higher order forms, for example generative (Senge, 1990.), proactive (Klimeki and Lassleben, 1998) and double-loop (Argyris and Schon, 1974; 1978) learning, require the creation or development of new understanding or ways of working in response to more radical change. According to Stein and Vandenbosch (1996: 115), "higher-order organizational learning occurs when a company adopts new principles, assumptions and paradigms which often turn into competitive advantage." This links higher order learning with the developmental definition of learning leading to enhanced effectiveness derived above.

It should be recognized that not all writers concur with this distinction of two levels of learning. Critics include Burgoyne and Hodgson (1983), and Klein (1989), who suggest that the types of learning identified are not unique but are inextricably linked. This criticism comes about in part because identification of where lower order learning stops and higher order learning starts is difficult, and is often subjective. It is also created by the confusion engendered by some authors to add additional types around the levels identified (see for example, Hawkins 1994; Snell and Chak 1996; Torbet 1994). For Argyris and Schon's (1974; 1978) model, these include zero or 'not' learning (a state which may seem obvious), and triple-loop learning, characterized as 'learning to learn' (Dodgson 1993). Given the speculative nature of these additional types, and a desire for parsimony, clarity and simplicity, a two-fold model is used here.

In identifying the distinctions in organizational learning theory that exist in terms of higher and lower order levels of learning, Sadler-Smith *et al.* (2001) go on to suggest that this distinction defines a difference of degree in learning that can be seen quantitatively. They distinguish between active (higher level, double-loop, generative, etc.) and passive (lower level, single-loop, adaptive etc.) learning orientations, and have developed an instrument that assesses the collective learning orientation of a firm in these terms. This is used in the research reported below. However, the importance of this distinction between two learning levels or orientations, for this research,

stems from the role they play in the creation of new understanding in response to change. Significantly, as discussed below, higher order (active) learning is critical here.

Shared Understanding

There is one key aspect of organizational learning evidenced by the exemplars shown in Table One that was not identified above. Anderson, Gustavsson and Merlin (1995), Snyder and Cummings (1998) and Stata (1989) all identify organizational learning as something that has to be shared, and it is widely recognized that the maintenance and development of shared understanding or beliefs across organizations is a key aspect of learning organizationally (Klimieki and Lassleben, 1998; Williams, 2001). In seeking to identify the site and source of this shared understanding, Kim (1993) and others (for example Sadler-Smith, *et al.*, 2001; Senge, 1990; Spicer, 1998) identify an important role for the shared mental models held across an organization. At the individual level, mental models represent the unique ways in which we view the world, and hence affect our behavior and decision making within it (Johnson-Laird, 1983). In organizations, there is a recognition that collective points of view and shared understanding play a significant role in defining shared approaches to decision making and behavior (Dixon, 1994; Douglas, 1986; Gioia and Sims, 1986; Morgan, 1986), and these collective understanding can be represented as shared mental models. Furthermore there is growing recognition that these shared understandings or mental models are themselves developed and maintained through organizational learning (Kim, 1993; Klimieki and Lassleben, 1998.; Sadler-Smith, *et al.* 2001; Spicer 2001; Williams, 2001).

The two learning levels or orientations identified above will interact with shared mental models in different ways (Sadler-Smith, *et al.*, 2001; Spicer 2001). According to Kim (1993), shared mental models consist of organizational routines and *weltanschauung*, (world-views or organizational frameworks). Routines contain the information and knowledge required to complete specific tasks. *Weltanschauung* contain the assumptions, beliefs and deep understanding that define the routines. Lower order (passive) learning is seen as interacting with and developing the existing routines that exist in the organization, whilst higher order (active) learning requires generation of new understanding or routines through action on the *weltanschauung* that define those routines. Development of new shared

understanding (mental models) through organizational learning, is therefore going to occur when organizations, required to change, are faced with new challenges or the need to implement or take-up new ideas and ways of working (development of new routines). The effectiveness of this is likely to be dependent on the learning orientation adopted by an organization. Take up of new understanding requires higher order (active) learning across the organization as a whole. Employees will only be able to take on board new ideas effectively if capable of adopting higher order learning. Hence, it is likely that those organizations whose members show more affinity for higher order learning will show greater uptake of new organizational issues (i.e. greater shared understanding), it is this declaration that is explored below.

RESEARCH DESIGN

The research was undertaken in two UK local authorities that had just undergone significant changes in their working practices, and explored the new understanding developed in each organization as a result of these changes. This meant that the new issues explored were different in each organization. The names of these councils have been changed below to preserve their anonymity. In the first organization, a district council ('Westcountry District Council'), providing services to a population of around 75,000, the issue explored was its 'service planning process'. This is essentially business planning, and had been implemented in response to regulatory and 'business' pressures, to meet national government demands for 'best value' and to encourage wider involvement in planning. In the second authority, a larger county council ('Regional County Council'), serving around 500,000, it was new procedures for budget setting, incorporating a longer timeframe and aimed at wider involvement, that provided the research issue. In both cases, these new processes had been in place for less than 12 months.

The research was undertaken in two phases. In Phase One, cognitive mapping was used to explore senior managers' understanding of the issue under exploration. Cognitive mapping is a range of techniques which allow researchers to obtain "graphical descriptions of the unique ways in which individuals view a particular domain (field of thought or action)" (Langfield-Smith, 1992: 350). Irrespective of the actual methodology employed, what cognitive mapping does is allow the researcher to create an image of an individual's understanding of a particular

aspect of their environment. It is beyond the scope of this paper to review the range of methodologies available for mental model elicitation, for interested readers, both Huff (1990) and Swan (1995) both provide extensive reviews and summaries. Here, a semi-structured interview procedure is adopted, and cognitive mapping is used to identify individual managers' understanding of the issues identified in each organization, which is then explored for evidence of shared understanding amongst these groups. Phase One is informed by a research question:

RQ: *Senior managers' shared understandings of the issues identified can be elicited through cognitive mapping.*

This question is essentially methodological, and represents a pre-requisite for exploring the shared understanding of these issues across each organization in Phase Two. A research question is appropriate for the exploratory and qualitative nature of the research in Phase One. It was expected that the senior managers interviewed would show commonalities in their individual understandings that would allow a shared map to be drawn. The extent of this is explored below. The output of the cognitive mapping in Phase One also provides an input into Phase Two. This used a questionnaire survey, distributed across each organization, through which the perceptions of employees in relation to managers' shared understanding, identified in Phase One, could be explored in relation to the learning orientation that exists in these organizations. The content and construction of these questionnaires are also described below. Phase Two is informed by two hypotheses:

H1: *Uptake of shared understanding by individuals throughout an organization is consistent, in that this uptake is representative of a single factor depicting uniform understanding of the 'issue' explored across that organization.*

H2: *The extent of uptake of shared understanding throughout an organization is positively related to an active learning orientation.*

Hypotheses are appropriate for Phase Two, as the research here relies on quantitative methods and analysis. Hypothesis One is concerned with the wider uptake of the shared understanding evidenced in Phase One, and represents an expectation that this is, when viewed by

respondents, representative of a single issue across each organization. The second hypothesis addresses the key question of this research: the relationship between an organization's learning orientation and the development of new shared understanding. Both phases of research are described below.

PHASE ONE: COGNITIVE MAPPING

Phase One adopted a semi-structured interviewing approach, based on established best practice for interviews of this type (Scheper and Faber, 1994; Eden, 1992; Brown, 1992; Vennix and Gubbels, 1992), facilitated through application of *Decision Explorer* (Version 3.0.6; 1997), a specialist cognitive mapping tool. This allowed for open, non-directive identification of the issues (concepts), and relationships (links) between these, with the output in the form of a causal cognitive map. The senior management teams from the two participating organizations were interviewed as individuals. The interviews focused on the particular issue identified by each of the participating organizations, and lasted between 45 minutes and an hour and a half. The typical finished map usually contained around 20 concepts, although the actual number of concepts varied quite considerably between individuals. The outcome of the interview consisted of a cognitive map, built by the participant (aided by the interviewer), which represented that individual's understanding of the issue under discussion. Interviews were recorded, and tapes were reviewed to ensure that they concurred with the image and information obtained.

Subsequent to the interviews, a shared 'senior management' cognitive map was drawn for each organization. Individual maps were elicited initially, so that the range of understanding of each issue could be explored. Individual interviews also avoid the potential problems of group-think and political behavior that can sometimes compromise map generation with a group (Langfield-Smith, 1992; Risch, Troyana-Bermudez and Sterman, 1995). The shared map was drawn, following established best practice (Carley, 1997; Scheper and Faber, 1994; Vennix, Andersen, Richardson and Rohrbaugh, 1992; Eden, Jones and Sims, 1983), by the researcher merging concepts from individual maps assumed 'with great care' to be sufficiently similar (Bougon, 1992). This process is subjective, depending on the opinion and skill of the researcher. In practice, this involves sorting through the concepts obtained, and matching those that have been described in the same way by participants and/or

those that have similar influence. This is a 'congregate' map (Bougon, 1992), including all the concepts identified by the participants in the individual mapping process, connected by those concepts identified as existing in common between one or more individuals. Congregate maps have been chosen in recognition of the fact that all the information incorporated in each individuals' understanding contributes to shared understanding, which exists, like individual understanding in the minds of individuals within an organization, and facilitates transfer between them.

Cognitive Mapping Results

In both study organizations, interviews were conducted with eight senior managers, all members of the managing board of the council. Participants had volunteered and were given the assurance that their input would be anonymous. In the first organization, Westcountry District Council (*WDC*), all the respondents were male, and ranged in age from 40 to 51 years. They had all been employed by *WDC* for considerable period of time (3½ years to 23 years), but had been in position for much shorter periods (7 months to 6 years). Within Regional County Council (*RCC*) participants were aged between 44 and 50 years, and all were again male. Length of service ranged from 7 to 27 years, with tenure in current positions being between 1 month (as head of department, with 4 years as deputy prior to this), and 9 years.

In both organizations, interviews were successful with respondents identifying between 14 and 33 concepts in respect of the issues identified. A shared map was created for each organization. In *WDC* this reduced the aggregate 152 concepts and 283 links in individual maps to a congregate model incorporating 71 concepts and 253 links, in *RCC* the 168 concepts and 340 links evidenced in individual maps were merged to form a congregate representation incorporating 97 concepts and 290 links. Both these models are too complex to represent as single images, within them they integrate the total of managers' individual understandings of each organizational issue. Whilst the content of the maps hold considerable information of interest to each study organization, and in both became the subject of much discussion, it is the nature of the shared understanding they represent that is of interest here.

Commonalties identified between the individual maps when creating the shared map suggest that in both organizations, at the senior management

level, there is shared understanding of the 'new' issues investigated. Furthermore, discussion of the congregate maps created with the management boards from which interviewees were drawn, suggested that the shared understanding represented was recognized and supported by these groups. However, there were differences in the nature of the shared understanding evidence in the two councils. The individual maps obtained in *WDC* appeared to have more in common with each other than the individual maps obtained in *RCC*. The 71 concepts in *WDC's* congregate map represent 46.7% of the aggregate number of individual concepts. This compares favorably with *RCC* where the 97 concepts in the shared map represent 57.7% of the total across the eight individual maps. This suggests that there is greater consistency in managers' understanding in *WDC*. The content of maps confirms this. In discussing their service planning process *WDC* managers were concerned with the process and its impact on the overall organization. In *RCC*, however, despite having a similar issue and comparable responsibilities, in discussing the budget setting process, individual managers were more concerned with how it impacted in their department or area of responsibility. Conversely, the higher ratio of links per concept in *WDC* (3.56) compared with *RCC* (2.99) suggest that, despite the greater overlap in understanding, the interaction of concepts identified within *WDC* is more complex than within *RCC*. The implications of the above observations are discussed further below.

PHASE TWO: QUESTIONNAIRE SURVEYS

In Phase Two, a self-report questionnaire was created for each organization to assess the uptake of their 'new' organizational issue and learning orientations. This incorporated three key elements, assessing shared understanding, learning orientation and respondent characteristics.

For each organization a 'one-off' organization specific tool was created from the congregate cognitive map that represents the major output of Phase One. Design of the questionnaire followed published best practice for the use of surveys in relation to cognitive mapping (Roberts 1976; Kleindl 1997; Ferguson, Kerrin and Patterson 1997). Concepts were selected from the shared map and reframed as agree/disagree statements. Three criteria were used to select concepts for inclusion in the questionnaire: 1) their significance, based on the number of interview respondents identifying a concept, 2) the extent of their 'domain', and 3) their 'centrality'. Domain identifies the link density of a concept, and

represents a count of the total number of links surrounding that concept. It is calculated by Decision Explorer, which provides a hierarchical domain analysis listing concepts in descending order of link density (Banxia, 1994). Analysis of centrality (a weighted measure of domain identifying three levels of influence around a concept) provides a score for the number of concepts linked to a particular concept within a map up to a specified numbers of 'band levels' surrounding that concept. Band levels are the numbers of links between the central concept and those surrounding it. The Decision Explorer default setting was used for this analysis, which calculates the centrality score from the first three band levels (i.e. those concepts which are within three links of a specific concepts). This uses diminishing weights so that all concepts at band one are divided by one, concepts at band two are divided by two and concepts at band three are divided by three (Banxia, 1994). The resultant statistic is given as a centrality score from the total number of concepts traversed, with the higher that score the greater the sphere of influence surrounding a concept.

Selecting in this way identifies the 'most important' elements of each issue considered, according to the managers interviewed, which, if organizational learning occurs effectively, should show the greatest uptake in the organization as a whole. Potential items were initially reviewed and commented on by individuals who had participated in the mapping exercise. In each organization a final unique set of 26 items was created. This number emerged by chance, following refining and removal of indistinct items. A five-point Likert-type scale was used, ranging from strongly disagree (scored one) to strongly agree (scored five). Items were ordered randomly within the instrument (Bailey, 1994). The structures of response to these questionnaires are explored below. A final open question asking respondents if they had any comments on the issue addressed in the instrument was also included.

Each organization's learning orientation was assessed through the new scale developed by Sadler-Smith *et al.* (2001). This contains nine items, which ask individuals to assess their organization's learning orientation in terms of a bi-polar active-passive learning construct which is representative of higher versus lower order forms of learning. The scale's authors report acceptable initial data in terms of this instrument's reliability and validity (based on acceptable scale

reliabilities, test-re-test reliability and exploratory analyses). Within the scale six items are representative of higher order (active) attitudes to learning (e.g. We do have set working practices, but can change these in pursuit of greater efficiency if need be). The remaining three represent a lower order (passive) learning orientation (e.g. Employees are discouraged from experimenting with new and novel ways of working). Items are again scored on a five point Likert-type scale. Lower order items are scored negatively, and the total score for the scale obtained by adding together scores for individual items and dividing by nine. Therefore, higher scores indicate a greater propensity for higher order learning.

The respondent characteristics section asked for information on their gender, age, length of service within the organization, department and job level.

The questionnaire contained the three elements in the order described, and was piloted in both organizations. At this stage, it was decided to

'reverse' some cognitive map items so that they represented the opposite viewpoint to that originally expressed. This was done to reduce the potential for bias from respondents replying positively to the item set as a whole rather than each item individually (Oppenheim, 1992; Garg, 1996).

The questionnaires were distributed through the internal mail services of both organizations. Both were supported by a covering letter, signed by both the researcher and a named senior individual within each organization, explaining the purpose of the survey, outlining the organizations support, and stressing that all responses would be anonymous and confidential. Respondents were asked to indicate the extent to which the statements in the questionnaire applied to their organization. It was stressed that there were no right or wrong answers, and that individuals should respond with their immediate reaction giving the answer that most closely corresponded with their opinion. A Freepost envelope was provided for returns.

TABLE 3
SAMPLE CHARACTERISTICS

		<i>WDC (n = 112)</i>		<i>RCC (n = 399)</i>	
		<i>n</i>	<i>Percent</i>	<i>n</i>	<i>Percent</i>
Gender	Male	58	51.8	235	58.9
	Female	53	47.3	164	41.1
	Missing	1	0.9	-	-
Age	<31	23	20.5	50	12.5
	31-40	29	25.9	110	27.6
	41-50	40	35.7	134	33.5
	51-60	15	13.4	98	24.6
	>60	3	2.7	7	1.8
	Missing	2	1.8	-	-
Length of Service	<6	30	26.8	70	17.5
	6-10	42	37.5	126	31.6
	11-15	16	14.3	70	17.5
	16-20	12	10.7	58	14.5
	>20	7	6.2	75	18.9
	Missing	5	4.5	-	-
Job Level	Senior manager	13	11.6	27	6.8
	Middle manager	13	11.6	108	27.1
	First line manager	17	15.2	97	24.3
	Staff	58	51.8	131	32.8
	Others (own description)	6	5.4	36	9.0
	Missing	5	4.4	-	-
Department	Service providing	57	50.9	287	71.9
	Support/corporate	44	39.3	112	28.1
	Missing	11	9.8	-	-

Questionnaire Surveys Results

In *WDC*, a potential sample of 251 employees was identified; made up of senior/central office staff from the council who were involved with service planning. 112 usable responses were returned (questionnaires missing responses from the first two sections were excluded), representing a response rate of 44.6%. In *RCC*, 947 staff involved in budget setting were identified, and 399 usable responses (42.1%) were obtained (responses missing any information were excluded). Respondent Characteristics are summarized in Table Three. Subsequent analyses were undertaken with *SPSS* (Version 8.0, 1997).

Exploratory factor analysis (*EFA*), allows a researcher to systematically examine a set of variables in order to discover whether latent variables exist which are relatively independent of each other (Tabachnick and Fidell 1996; Child 1990). *EFA*, through principal components analysis of items was used here to explore the extent to which the latent structure of the shared understanding items in each questionnaire is representative of a single factor depicting consistent understanding of the 'issue' explored across that organization. Principal components analysis of items mathematically produces several linear combinations of variables (factors), which summarize the patterns of correlations between these variables independently, and as a result can be used (with varying success) to reproduce the observed variables.

For *WDC*, the initial unrotated solution produced seven factors, with eigenvalues over one, explaining 66.7% of the variance. The scree plot was inconclusive, suggesting two or three factor solutions, explaining 41.9% and 47.9% of the variance respectively. As the 'eigenvalues over one' criteria may overestimate the number of factors, and when a scree plot is inconclusive, Tabachnick and Fidell (1996: 673) suggest that an alternative way to proceed is through the examination of a number of alternative structure solutions. Hence, both two and three factor solutions were extracted and examined. Rotation to simple structure using orthogonal (varimax) rotation was undertaken for both. Detailed examination of these suggested that the two factor solution provided the most powerful explanation of the data. Factor 1 has an eigenvalue of 6.90, Factor 2 one of 3.99, and between them they account for 41.9% of the variance in the data.

Table Four contains this two factor solution for the shared understanding questionnaire in *WDC*, 0.32 was taken as the criterion of salient loading, being appropriate for investigative, exploratory research of the type undertaken here (Tabachnick and Fidell 1996: 677), values of 0.32 and above are therefore shown in bold. There were two items that failed to load significantly on either factor (17 and 24). There were also two items that loaded significantly on both factors (20 and 22). All the other items loaded singly, and there was no inconsistency in loadings on either factor, with the sign ('+/-') of factors' loadings being consistent with their original phrasings. Excluding the two items identified as problematic by loading on both factors, Factor One comprises 11 items. Examining these items in detail, they all appear to be concerned with the results or 'outcomes' of the service planning process. Factor Two is also made up of 11 unique items. Here examination of items suggested that they may be representative of a different element of the shared model, namely the extent to which there is 'commitment' to, participation in and support for the service planning process in *WBC*.

For the *RCC* data, seven factors with eigenvalues over one, explaining 49.8% of the variance, were obtained in the initial (unrotated) solution. The scree plot was again inconclusive suggesting three or four factor solutions. Three and four factor solutions were therefore obtained and rotated to simple structure using orthogonal (varimax rotation). Patterns of loadings on these solutions are unclear, both have a significant numbers of items which either fail to load or load on multiple factors. Furthermore, examination of the detail of the factor structures failed to identify any logical patterns in the item loadings. As no logical latent structure appears evident from this analysis, no subsequent presentation of a resultant factor solution is made here, and the items in the *RCC* shared understanding questionnaire are taken to be representative of overall shared understanding of the budget setting process.

Descriptive statistics for both questionnaires are summarized in Table Five. For *WDC*, two shared understanding scales have been derived, each representing the mean response for the sets of 11 unique items on the two factors identified above. These show scores for understanding of the service planning process in respect of the extent of 'commitment' shown across the council and the extent of recognition of its 'outcomes'. Uptake of 'commitment' in employees understanding of the service planning process is higher (mean = 3.75,

TABLE 4
WDC SHARED UNDERSTANDING: FACTOR LOADINGS

<i>Item</i>	<i>Factor 1</i>	<i>Factor 2</i>
1. The service planning process has simplified the council's structure.	0.66	-0.01
2. Service planning has not helped improve the council's effectiveness.*	-0.78	0.05
3. Restructuring the council into service units has not led to changes in working practices.*	-0.29	0.34
4. The service planning process has improved communications throughout the council.	0.75	-0.31
5. Service planning has not helped the council create of mechanisms for performance management.*	-0.67	0.19
6. The service planning process does not requires commitment from all those involved in the process.*	-0.22	0.63
7. Service plans result in the development of clear aims and objectives for service units.	0.66	-0.26
8. Commitment to the service planning process relies, in part, on the feedback provided by service units to the council.	0.30	-0.52
9. The service planning process has required the council to draw up mission statements/ key principles/ position statements.	-0.06	-0.50
10. Commitment to service planning is demonstrated by the uptake of mission statements/ key principles/ position statements.	0.21	-0.44
11. The service planning process has not resulted in a higher quality of service provision.*	-0.81	0.15
12. The service planning process has led to performance reviews that help to maximise efficiency.	0.65	-0.19
13. The service planning process does not require support from everyone throughout the council.*	-0.07	0.70
14. Service planning has created shared resources that give the council the flexibility it requires to meet needs.	0.62	-0.16
15. A key part of the service planning process is the monitoring and evaluation of targets.	0.26	-0.35
16. Creation of a shared purpose within the council is not a key element of the service planning process.*	-0.16	0.72
17. The service planning process is 'owned' by all members of the council.	0.25	-0.15
18. Important principles (such as openness and honesty) are recognised by everyone in the service planning process.	0.70	-0.18
19. The service planning process does not require all the interested parties (both within and beyond the council) to be consulted about a particular issue.*	-0.07	0.59
20. The service planning process has not made the council more responsive to change.*	-0.67	0.51
21. In terms of its outcomes, the benefits of the service planning process outweigh any problems or difficulties.	0.74	-0.24
22. One of the key benefits of the service planning process is that it has fostered learning throughout the council.	0.66	-0.34
23. Service planning has not improved my own working environment.*	-0.63	0.20
24. Politics within the council have not had a significant influence on the service planning process.*	0.21	-0.19
25. Service planning is aimed at ensuring the council maximises benefits for all members of the community.	0.21	-0.42
26. Pressure to provide 'Best Value' is not an important driver of the service planning process.*	0.29	0.48

(Loadings of 0.32 and over in bold; * = item reversed)

$sd = 0.48$) than the recognition of its outcomes (mean = 3.08, $sd = 0.73$). This difference was confirmed through a paired sample t-test ($t = -11.366$, $df = 111$, $p < 0.001$), which suggests that they are significantly different at the 99.9% level. In *RCC*, a single 'shared understanding' item (mean = 3.06, $sd = 0.69$) was obtained from the 24 items in the budget setting process questionnaire. All three of these scales exhibit acceptable levels of internal reliability ($\alpha > 0.7$; Guilford 1956), and examination of the results in terms of alpha-if-item-deleted and item total correlations did not suggest the scale reliabilities could be improved through removing further items. Results for the nine-item learning orientations scale are, for both samples, in line with those previously obtained (Sadler-Smith *et al.*, 2001), and both scales exhibit acceptable internal reliability. The learning orientation reported by *WDC* (mean = 3.62, $sd = 0.63$) is significantly higher (more active) than that for *RCC* (mean = 3.22, $sd = 0.30$), confirmed as statistically difference at the 95% level through an independent samples t-test ($t = -2.248$, $df = 190.281$, $p = 0.026$).

Turning to the relationship between learning orientation and shared understanding, these are significantly correlated in *RCC* ($r = 0.20$, $p < 0.001$), but this correlation accounts for only 4.0% of shared variance. In *WDC*, shared understanding is also significantly correlated with learning orientation, in terms of both commitment ($r = 0.67$, $p < 0.001$) and outcomes ($r = 0.45$, $p < 0.001$), these account for 44.9% and 20.3% of shared variance respectively. These results indicate that there is indeed a relationship between learning orientation and shared understanding in the

organizations studied. Scales for commitment and outcomes in *WDC* are also correlated ($r = 0.54$, $p < 0.001$), indicating 29.2% of shared variance.

Influence of respondent characteristics on the shared understanding evidenced in both organizations, was investigated using simple factorial analysis of variance (*n*-way anova), in order to explore if any differential patterns of shared understanding could be identified. Data on respondent characteristics summarized in Table Three in such a way to ensure that appropriate cell sizes were maintained and none of the variables contravened the assumptions of the anova test. In *WDC*, significant main effects were indicated for gender ($F = 4.02$; $df = 1$; $p < 0.05$) and department ($F = 23.28$; $df = 1$; $p < 0.001$) on shared understanding commitment, no higher order effects were identified. These indicate that men (mean = 3.65, $sd = 0.32$) exhibit higher levels of shared understanding uptake than women (mean = 3.58, $sd = 0.27$), and that the service providing departments (mean = 3.58, $sd = 0.29$) have lower levels of uptake than those departments whose responsibilities are corporate (mean = 3.73, $sd = 0.28$). No significant effects were identified on shared understanding outcomes in *WDC* or on the single shared understanding scale derived from the *RCC* data. Implications of all these results are discussed below.

DISCUSSION

The aim for this research was to explore the relationship between the uptake of new shared understanding, following changes to business practice, and the learning orientation or approach espoused across a firm. Identification of senior managers' shared understanding in respect of

TABLE 5
DESCRIPTIVE STATISTICS

a) *WDC*

	Mean	sd	α	Range
Understanding - Commitment	3.75	0.48	0.78	2.36-4.84
Understanding - Outcomes	3.08	0.73	0.91	1.09-4.69
Learning Orientation	3.62	0.63	0.86	1.94-4.64

($n = 112$)

b) *RCC*

	Mean	sd	α	Range
Shared Understanding	3.06	0.69	0.85	1.33-4.67
Learning Orientation	3.22	0.30	0.86	2.88-4.50

($n = 399$)

these issues was identified as a prerequisite methodological requirement, expressed in the research question stated above. In both organizations, cognitive mapping interviews undertaken with representative samples of senior managers identified detailed individual understandings. From these it was possible to identify, across individuals' maps, concepts in common that allow shared maps of understanding to be drawn for both organizations. The extent of overlap identified in individual understanding that allowed these congregate maps to be drawn suggests support for the statement presented in the research question above: senior managers' shared understandings of the issues identified can be elicited through cognitive mapping. This allows the results of the second phase of research to be investigated for what they tell us about the wider shared understanding and learning orientations across the two organizations studied.

Additionally, in respect of these maps, there are some details worthy of note. The higher degree of consistency in understanding identified in *WDC* suggests that senior managers in this organization have more understanding 'in common' of the new organizational issue they face than their counterparts in *RCC*. *WDC* managers show much less variability in their understanding of service planning than managers in *RCC* do in respect of the budget setting process in their organization. It was identified above that this distinction could be due to managers in *RCC* being concerned with the impact of budget setting in their own area of responsibility. Alternatively, this difference may be due to the different processes explored in each organization. However, given their similarities, it might also represent a genuine difference in perspective between the two sets of managers, *WDC's* showing more holistic, corporate concerns and responsibilities, whilst those in *RCC* have their own functional priorities highest in their minds. The implication of this is that, in *RCC*, if genuine sharing of information is required between managers for effective budget setting (a not unreasonable expectation), their personal, departmental concerns might prevent this. Conversely, in *WDC*, the more over-reaching concerns of managers could, themselves become divisive, representing a form of 'group-thinking' that prevents them from bringing different points of view to the service planning process. The greater complexity of understanding in *WDC*, identified by the higher ratio of links per concept in its shared map compared with *RCC's* might suggest that this is unlikely. This indicates that

WDC's managers show a greater 'interconnectedness' in their understanding, borne out in the content of their maps, in which they identify the potential for and nature of the impact of service planning across the council and individual areas outside their direct responsibility. The smaller size of *WDC* may, of course, make such connections easier to identify.

Phase Two, exploring the extent of these shared understandings across both organization through questionnaire surveys, indicates potentially more complex patterns in responses, than proposed in Hypothesis One. The results of exploratory factor analysis and reliability analyses for the *RCC* data does indicate that, in this organization, uptake of shared understanding appears to be representative of a single factor depicting consistent understanding of the 'issue' explored. Furthermore, analysis of variance failed to identify any differences in uptake according to respondent characteristics. In *WDC*, however, uptake is more complex. Exploratory factor analysis identified two factors, not one, and investigation of these suggested that these were indeed indicative of two issues representing 'commitment to' and the 'outcomes of' service planning. This distinction was reinforced by a number of responses to the open question included in the service planning questionnaire: "*In terms of question 11 [The service planning process has not resulted in a higher quality of service provision] - this has yet to be measured/ time is needed*" is a typical example. This suggests a different, more critical, quality to the nature of shared understanding in *WDC*. Responses in respect of commitment are generally more positive than those for the outcomes. It appears that the *WDC* employees sampled understand the nature of and commit to the process of service planning. However, at the time of the study (less than one year after the implementation of service planning), they were less convinced of its benefits (outcomes) and adopted a more reserved position in respect of these. Also, in *WDC*, analysis of variance identified differences in response in respect of service planning commitment for both gender and department. No explanation is offered for the difference in gender (which sees men as being more 'committed' to than women), especially as this difference is marginal and both groups remain relatively positive. The difference in terms of department is more distinct. It is perhaps not that surprising that the corporate aspects of *WDC*, responsible for the implementation and direction of service planning (and for whom this process has significantly reduced complexity) show higher

commitment to the process than the service providing departments, where it has had the greatest impact in terms of changes in working practice. Overall, the above suggest that Hypothesis One has to be rejected. Nevertheless, in both organizations, logical and significant patterns of shared understanding in respect of the issues addressed have been identified. The fact that, in *WDC*, this wider shared understanding is more complex does not, however, prevent the exploration of its relationship with this organization's learning orientation.

In respect of these relationships, the positive correlations between the shared understanding scales and learning orientations identified for both organizations suggest that uptake of shared understanding is indeed positively related to an active learning orientation. This suggests acceptance of Hypothesis Two. However, the extent of learning orientation reported and the degree of shared variation observed through correlations across the two councils studied have some potentially important implications. The correlations between both shared understanding scales and learning orientation in *WDC* account for considerably more shared variance than the same measure for the single shared understanding scale and learning orientation in *RCC*. This suggests a much stronger relationship between learning approach and shared understanding uptake in *WDC*, compared with *RCC*. Additionally, the reported learning orientation for *RCC* is significantly lower than that for *WDC*. This indicates that *WDC* has a more active learning orientation than *RCC*. This may account for the higher degree of shared variance observed in *WDC*, with more active learning about the new issue addressed in this organization resulting in greater uptake. A more passive approach to learning in *RCC* was something seen in respondents' comments on the budget setting process, with a number of individuals suggesting that they failed to see the importance of the new process, for example: "*this has little relevance or interest to me*". Given that senior managers in *RCC* had identified both the sample as being intimately involved with budget setting, and the importance of this issue for the organization, such ambivalence and lack of active uptake is significant.

The import of this suggested relationship between shared understanding and learning orientation is, however, confused by the complexity of uptake in shared understanding observed in *WDC*. Whilst both shared understanding scales in *WDC* show

higher shared variance with learning orientation, the actual levels of uptake (expressed in terms of agreement with the understanding drawn from the senior managers' cognitive maps) between the two scales is significantly different. The straightforward relationship suggested above is seen with commitment to the service planning process, with active learning related to high levels of uptake. This active learning has, however, led to lower levels of uptake in respect of the outcomes of service planning, but these two variables still exhibit a relatively high level of shared variance. One possible explanation for this distinction is that learning orientation has to do with quality as well as extent of learning. It was suggested above that the two factors identified in *WDC*'s shared understanding came about because, whilst the council's staff recognized the role and importance of service planning, and had therefore committed to it, they adopted a 'wait and see' approach with respect to its, as yet unproven outcomes. Potentially therefore, employees in *WDC* recognize the potential outcomes, but do not yet agree that these have been seen. Again a number of respondents support this view, with comments like "I understand that service planning is expected to improve efficiency, but I have yet to see this". Uptake in this regard is therefore qualified, and this might suggest that higher order (active) learning has allowed, in this instance, employees to learn about this process, but also show detail and critical effectiveness in their learning, which prevents them from taking the outcomes of service planning as read.

IMPLICATIONS FOR RESEARCH

The research and results identified above have a number of wider implications, as well as limitations, that should be identified.

Firstly, the research adds to a growing cannon recognizing and adopting cognitive mapping to explore learning in organizations (see Klimecki and Lassleben, 1998, and Lee *et al.*, 1992 for other examples). These techniques allow researchers to gain insights into the complexity of individual and shared understanding across organizations, although their limitations must be minimized. This is best done by ensuring those undertaking the mapping are trained, practiced and experienced in the protocols they use, in order that the potential for bias and subjectivity are reduced. Following best practice models, as derived and described here, will also reduce the possibilities of mapping errors occurring. There also remain the questions of whether the shared understanding identified is truly representative of

shared mental models, and how the mechanisms that allow for the genuine transfer of understanding (and not just evidence of interconnectivity) can be identified. These represent questions for further research.

Future research is therefore required to replicate the observed relationships, to investigate the issues identified above, to explore the complexities of learning and the development of new understanding in organization, and significantly to identify other factors (contextual and possibly organizationally specific) influencing the uptake of shared understanding. This is likely to require more detailed comparative studies, including longitudinal studies of learning and shared understanding uptake, and investigation of the causes of failures of and differences in learning. Key to this research is the question of how new shared understanding is developed through higher order (active) learning. This is likely to require exploration of the forms, nature and styles of learning and understanding in organizations, and may center, initially, on identifying the networks of relationships that allow for the transfer of ideas, knowledge and understanding.

Allowing organizations to select the focus for the research, as adopted here, was found to be of considerable benefit. This appears to have both maximized the richness of data obtained and helped ensure access to both research sites. The nature of the understanding addressed was incidental to the aim of this research (to explore its uptake and relationship with learning). Therefore, the ability to offer managers the opportunity to explore their own and their organization's understanding of new business processes, and the chance to gain an insight into any gaps or failings in understanding was a powerful tool in gaining their support.

Finally, whilst suggestions of causality have been given above, it should be recognized that this is all they are, suggestions. One of the limitations of research of the type undertaken, and the evidence provided here is that it cannot, in fact, identify any empirical causality. There were however patterns of uptake and learning that indicate relationships exist between the uptake of shared understanding and the learning orientations that exist across the organizations studied. Furthermore, the complexity of these interactions in *WDC* suggests that the relationships between learning approach and uptake of understanding are not as straightforward as supposed. It is likely

that other factors impact on uptake of understanding, and that these factors are likely to be different, and interact in different ways in different organizations. Noticeably, given that both studies described here were sited in local authorities, neither made any reference to the political parts of these councils. Whilst the research undertaken was exploring management issues within the management/organizational structure, the additional, contextual factor of political demands driven by elected councilors may be an example of a specific, organizational factor that affects the sharing of understanding across these organizations.

CONCLUSION

The results of the research described above do suggest a relationship between the development of shared understanding and the learning orientation of an organization, and, with qualifications, more active learning potentially leads to greater shared understanding. Whether this equates to evidence of genuine organizational learning following change is less clear. However, it is likely that those organizations who's members show greater affinity for higher order (active) learning will show greater uptake of new organizational issues (greater shared understanding), and this suggests that the role of learning following change is therefore key: organizational learning is going to be required if organizations faced with new challenges or the need to implement and adopt new ideas and ways of working (development of new routines) are to develop new shared understanding (mental models).

However, the details of the results suggest that the development of shared understanding in organizations is a complex and multifaceted process, beset with issues that mitigate against the identification of straightforward relationships. Significantly, the results in *WDC* suggest that, even when individuals learn about new issues and process, and do indeed recognize their role in and importance to their organization, they can still draw different conclusions to those of their senior managers. Uptake of new understanding and ongoing support for changed business practice must therefore never be taken for granted. Managers should never assume that the learning they expect or require has taken place, that even if they are confident about the effectiveness of learning across their organizations. The results from *WDC* suggest that, despite an active learning environment, and perhaps because of the effectiveness of the learning this creates,

employees can and will draw their own conclusions. Ongoing communication of every aspect of a change and new understanding required in an organization is therefore essential.

Ultimately, whilst providing some initial, empirical evidence for the possibility for learning organizationally, the results tell us relatively little about the mechanisms of learning across an organization. These are likely to rely on the network that exists in an organization: the interconnected relationships that allow for knowledge, understanding and information to be exchanged and discussed between individuals, managers and staff, and teams and departments, which allow for the transfer of learning. Further research is therefore required to address the complexity of learning organizationally to identify the other factors that impact upon the learning process, and explore the nature and mechanism of learning networks in organizations.

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