Investigating issues influencing knowledge sharing in a research organization, using the Appreciative Inquiry Method.

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Abstract

This research contributes to the literature on the subjective experience of knowledge sharing from the perspective of those actively engaged in it. The sharing of knowledge in organizations is influenced by interconnecting factors, including organizational mission, the use made of information technology, and the motivation of individuals. Much of the existing literature takes a reductionist approach to investigating these, treating knowledge as an asset and humans as rational beings.

A research organization provides knowledge services to its clients, in which knowledge is viewed both as an asset and as praxis, both aspects being used to meet the organization’s remit and help justify its continued existence. An officially mandated culture of knowledge sharing is promoted to motivate staff to develop and exploit the organization’s knowledge capability. Despite this, knowledge sharing has not been optimised. The Appreciative Inquiry Method, an interpretivist action research method from the “enquiry” tradition, was deployed amongst participants from the organization to help them give up their thinking the effectiveness of their knowledge sharing practice and their ability to improve it. This made possible a synthesis of the situation based on their shared understanding. The PEArL framework was used throughout to reflect on the conduct of the research.

The contribution of the research is in supporting and extending findings in the literature from an interpretivist perspective. The importance of knowledge-as-practice was affirmed, together with tacit knowledge possessed by individuals. Knowledge sharing is affected by the low value placed on knowledge-as-practice by the organization’s clients, which affects staff motivation and the way self-efficacy is expressed. The undervaluing of knowledge-as-practice influences pre-existing, informal knowledge subcultures, which subvert the formal knowledge sharing culture. The participants’ power in the situation is limited to providing the executive with a case for maintaining knowledge as practice, to encourage a culture of motivation to share knowledge and to increase access to sharing mechanisms. The contribution includes support for the importance of the “relationship” component of the PEArL framework.
Declaration

Whilst registered as a candidate for the above degree, I have not been registered for any other research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award.

………………………………………

Penny Hart
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Chapter 1: Introduction

1.1 Introduction

Knowledge sharing is an essential human activity and the need to do it effectively is increasingly acknowledged in modern organizations. There are many influences on how it can be carried out, and many assumptions made about those sharing knowledge with others. The researcher’s initial interest stemmed from researches into the Digital Divide, a subject which has been addressed through a knowledge management lens in journals such as Knowledge Management for Development, Information Technology and People, and through the International Telecommunications Union (ITU). There was a plethora of organizations with an interest in identifying and sharing best practice. At the same time, it appeared that assumptions were being made about the recipients of the knowledge sharing initiatives, without their necessarily having been consulted about what they thought or wanted. Moving on, the researcher became interested in the practical experiences of knowledge sharing, at an organizational and individual level. In a world where the sharing of knowledge and the breaking down of knowledge silos is of growing urgency to solve problems at many levels, it seemed worth enquiring into issues experienced by those who share knowledge.

The researcher’s initial interest was in questioning assumptions made in knowledge sharing. This influenced the research direction to be an exploration of the subjective aspects of knowledge sharing, from an individual perspective. The researcher conducted a field study in an organization whose raison d’être was the effective exploitation of scientific and technical knowledge, where sharing mechanisms and practices were already in place and whose members were interested in knowledge sharing best practice. This organization is described in Chapter Five. The research agenda was mutually conceived: the members were equally interested in thinking about their knowledge sharing practice, to see what issues faced individuals in reality; there was no specific issue to be addressed at the start of the study. An action research based method based on Vickers’s concept of Appreciation was used. It allowed for enquiry into the factors influencing knowledge sharing, and crucially, it permitted the participants in the study to do this for themselves, to reflect on their perceptions of knowledge sharing, with minimal influence from the researcher. As part of the action research process, the claims of the method to facilitate this were also examined.

The researcher’s view of knowledge sharing is that, as it ultimately happens at an individual level, human subjectivity is an important aspect of working with knowledge, and people’s assumptions and perspectives have a bearing on their attitudes towards it. Knowledge, as knowing, is needed
to make use of knowledge as an asset. As an initial position, the definition of knowledge which appears most relevant is Spender’s (2007, in 2009, p.164) category, knowledge-as-practice. According to this definition, to be actionable (to be made use of), information must be internalised by the individual. Practice involves “in-headedness”, tacit knowledge, in that the individual “knows” instinctively what to do (without necessarily being able to explain it). Also the individual’s subjective experience within the specific organizational context influences how practice is carried out.

The research aims were:

- to find out about knowledge sharing issues in the organisation: how those involved think about what knowledge means for them, how effective current knowledge sharing mechanisms are, and about the factors which affect their points of view and their ability to improve the sharing of knowledge as they see it.

- to compare the ideas about knowledge sharing of members of the organization with issues and linkages identified in the literature.

- to test the claims of an action research method (Appreciative Inquiry Method) to enable members of the organization to own their issues with minimal influence from the researcher, and to contribute to the development of the method.

The researcher’s intention was to help participants in the study to enquire into their own knowledge sharing practice, to realise and accommodate each other’s perspectives, making apparent the views, norms and values which they hold. Thus the findings of the field study were context-dependent. Their discoveries could not be predicted in advance, but as the researcher shared in the discovery process, it was possible to reflect on whether these discoveries supported work already done on knowledge sharing. Also, although research carried out in the interpretivist tradition is not generalizable, a “thick description” of the study was made so that readers could determine whether the ideas and insights discovered could be transferable to other knowledge sharing situations. The scope of the thesis is limited to organizations in the West or influenced by Western practice; the influence of national cultures in the Far East, for example, is not examined.

The research is innovative in that it is the first application of the chosen action research method to knowledge sharing, and an example of how subjectivity in this field can be investigated from the participants’ perspective. A contribution is made to the interpretivist literature of knowledge management, systems and action research in the “enquiry tradition”. This will also be of interest to communities of practice for whom knowledge sharing is an important activity.
Prior to carrying out the field study, there were aspects of knowledge sharing in which the researcher was interested. Despite the caveats outlined in Chapters Two and Three, factors influencing intention to share knowledge such as self-efficacy, reciprocity and trust (Davenport & Prusak in Choo, 2003; White & Korrapati, 2007) could be explored, and self-efficacy in particular examined with respect to knowing in practice (Orlikowski, 2002, p.251). During the field study the participants discovered knowledge sharing issues interesting to them. Comparing the two allowed the researcher to determine whether the knowledge sharing aspects of interest to her were supported in the context of the participant’s situation.

The contribution to knowledge concerns influences on the sharing of organizational knowledge. The value placed on knowledge-as-practice by those with power outside the organization affects informal knowledge sharing subcultures inside the organization. This affects individual motivation to share and self-efficacy, and the consequent sharing behaviours. The contribution is strengthened by use of an interpretivist, action research centred, methodology which privileged the perspectives of those involved. As part of the learning cycle, further realisations about the method were achieved, which contributes to the general research programme into its use.

1.2 Background

The movement from industrial to post-industrial economies has been characterised by the growth in the availability and use of information and knowledge (Castells, 2010). In the “Information Age”, an organization’s ability to generate, share and exploit knowledge plays an important role in its competitive advantage and in its survival (Wang & Noe, 2010, p.115; Davenport & Prusak, 1998; Walsham, 1995, p.74). Drucker (1968) introduced the concept of the knowledge worker, whose work consists of developing or maintaining knowledge. The discipline of knowledge management, initiated in the early 1990s, arose to provide organizations with the means to maximise the use of their knowledge to further their aims: to gain benefits from innovation, to ensure continuation of the organization, to compete in the market and to maintain reputation (Bock et al., 2005, p.87). This discipline privileged particular views of what organizational knowledge is, treating it as an asset or “content” (Hislop, 2005, p.14). In its later evolutions, the importance of exchange of tacit knowledge between individuals has been recognised, and latterly, the growth of collaboration in social networks (Dixon, 2010, p.144). Ideas about what constitutes knowledge in an organization have also developed (Kakabadse et al., 2003, p.86). With this recognition of the importance of tacit knowledge and collaborative working, and the increasing numbers of knowledge workers (Dewhurst et al., 2013), the effective sharing of knowledge at all levels of the organization becomes important to its success. In not sufficiently recognising the subjectivity of human experience, however, existing models of knowledge and knowledge sharing
in organizations are deficient in explaining what knowledge means to those working with it, how knowledge sharing happens in practice and what influences its effectiveness.

It is suggested in this thesis that an interpretivist approach is more effective in helping members of an organization think about the meaning of knowledge and about the checks, balances, obstacles, external influences and power relationships which affect their points of view and their ability to improve the sharing of knowledge as they see it. An interpretivist action research methodology from the “enquiry” tradition was used to help members of a research organization determine what knowledge means for them, and what knowledge sharing issues that they face. The approach chosen focuses on developing shared understanding in specific contexts, interpreting human experience, and giving participants ownership of their own investigation. Its value is in the nuanced considerations of boundary, participants’ appreciation of their situation and the value of bringing to the surface hidden assumptions, in a learning cycle.

1.3 Knowledge, Information, Data and Wisdom

When discussing the information age, Castells (2010) uses Bell’s determinist view of knowledge as “a set of organized statements of facts or ideas, presenting a reasoned judgment or an experimental result, which is transmitted to others through some communication medium in some systematic form” (Bell, 1975, in Castells, 2010). This definition does not accommodate the more subjective aspects of human activity and experience. “Knowledge” is a complex term to define clearly, depending on the tradition of thought, the context in which it is being used and the perspectives of those using it. An initial definition of organizational knowledge, in the context of this thesis, is attempted. Before doing so, it is worth making some general comments on the difference between knowledge and the other “contents of the human mind” (Bellinger et al., 2004): data, information and wisdom.

Ackoff’s (1989, p.3) set of definitions of knowledge, information and data is often cited in the literature on organizational knowledge. He positions these concepts in relation to each other, together with the processes which enable development of one from the other. In his schema, data are “symbols as representing the observed properties of objects, events and their environments” (Rowley, 2007, p.166), having no meaning in themselves. Information is data which have been processed to be useful, given relevance by relation to a context. He defines knowledge as knowing how to transform information into instructions, and wisdom as the application of judgement to knowledge to determine when it can be best used. Later authors (Bellinger et al. 2004) suggest that “understanding”, also an Ackoff category, is better used to explain the transition between the concepts. Wisdom remains an elusive idea, whose definitions are generally subsumed into higher orders of knowledge, depending on the authors.
These concepts have been positioned in a “DIKW Hierarchy”, which has been further developed (Figure 1.1) to show the structural and functional relationships between them, in terms of increasing meaning and value (Ackoff, 1989; Zeleny, 1987; Chaffey & Wood in Rowley, 2007). The hierarchy has been used in knowledge management literature to help thinking about the topic (Bellinger et al., 2004; Hey, 2004, p.3; Rowley, 2007, p.164; Spender, 2008, p.163).

Criticisms have been made of its inductive, sequential approach to the definitions of knowledge and information, and the nested-ness and overlap of concepts (e.g. knowledge-that and information) which do not accommodate learning through time (Frické, 2007, p.6; Spender, 2008, p.163). “Those who see knowledge as information cut across categories and meld data with meaning, obscuring the mysteries of how the categories become combined through practice” (Spender, 2008, p.164). A subjectivist perspective is introduced by Rowley (2007, p. 176), who proposes that the hierarchy should be inverted; as we decide which data is important to select, this pre-supposes that we need wisdom to make the decisions. This is analogous to the “readiness” to notice particular aspects of one’s situation, incorporated by Vickers (1968) in his idea of the Appreciative System, discussed in Chapter Four.

### 1.4 Approaches to defining knowledge

From a philosophical perspective, Zins (2007, p.487) comments that all attempts at the definition of knowledge are theory-laden (in the context of the theory being expounded) and takes the discussion back to ideas about knowledge as “justified true belief” (after Plato). To know something is to have a belief that it is true, and to have good grounds (e.g. based on experience)
for that belief (Pritchard, 2006, p.25). Simard and Jourdeuil (2012, p.6) discount this definition of knowledge: each of the constituent terms needs interpretation in context, and it excludes those aspects of knowledge to do with “craft”, with practice. They contend that it is more suitable for philosophical debate than for practical use. Definitions of knowledge explored in different epistemological traditions, however, provide a basis for descriptions of knowledge. Empiricism privileges experiential data (of the senses) and is the foundation for positivism. Idealism holds that knowledge is innate in an individual, inborn, and can be discovered by a priori mental processes. Rationalism holds the use of reason, rather than evidence of the sense, how knowledge is acquired or justified (Blackburn, 2008, pp. 114,117,307). In addition to these classical perspectives, Constructivism, from which interpretivism has developed, holds that knowledge is a human construction and privileges subjectivity (“[its] fundamental problematic is the knowing self, and its ongoing construction” (Spender, 2008, p. 171)). Pragmatism holds that the meaning of knowledge is the same as the practical effects of adopting it (Blackburn, 2008). Within sociology, the Critical perspective is also important (Habermas, 1986): knowledge is that which empowers a community to address imbalances of power and resources.

There is no broad agreement on the definition of knowledge as used in organizations (“organizational knowledge”), although authors agree on factors which differentiate it from information. These factors include context, expert skills and opinion, experience, and understanding (Rowley, 2007, p. 173). Definitions imply a mastery of information, which can then be deployed as action. For Nonaka (1994), knowledge concerns “beliefs, commitment, perspectives, intention and action”. Dreske (1981, p.86 in Nonaka, 1994, p.15) identifies knowledge as “information-produced (or sustained) belief [...] but the information a person receives is relative to what he or she already knows about the possibilities at the source”. The route from information to knowledge requires “synthesis of multiple information sources over time”, belief structuring and internalization of information, experience and “organization and processing to convey understanding...” (Rowley, 2007, p.172). The “in-the-head”ness of knowledge appears to be a crucial factor.

Two approaches to defining organizational knowledge have been proposed (Kakabadse et al., 2003, p.78). On the one hand, taxonomies of knowledge have been developed to capture its meaning from a variety of perspectives, and to codify the processes by which it can be transferred. For example, theoretical knowledge (“knowledge-that” or declarative knowledge) which relates to facts that are known, differs from practical knowledge (“knowledge-how” or procedural knowledge) that relates to the knowledge needed to perform a specific task (Ryle, 1949, pp.25-61), having parallels with Ackoff’s definition of knowledge. Explicit knowledge is that which can be articulated, codified and stored (Hislop, 2005). Much declarative knowledge, able to
be recorded in documents, databases and instruction sets, is viewed as explicit. Rowley (2007, p.178) argues that definitions of explicit knowledge and “actionable information” overlap. Tacit knowledge has been described as that which cannot be articulated -“we know more than we can tell” (Polanyi, 2009, p.4) - which is often not “known” consciously, and which is inculcated often through practice or apprenticeship. Tacit knowledge is acquired through attending to that which is to be known: “Into every act of knowing ... there enters a tacit ... contribution” (Polanyi, 1958, in Duguid, 2005, p.111). Knowledge can also be considered by unit of analysis: the dimension from the individual to the social, where the social can be either a group or an organization. This distinction is discussed in the literature on organizational knowledge (Tsoukas, 1996; Spender, 1996, Davenport & Prusak, 1998, Brown & Duguid, 1991). In the strand of knowledge management literature whose origins are in economics, the view of knowledge is as an individual endeavour. Community of practice and learning organization literature places more emphasis on the collective view (Wenger et al.,2002; Easterby-Smith & Lyles, 2011). Kakabadse et al. (2003, p.77) categorize the knowledge management literature as distinguishing between tacit and explicit knowledge, its organization and composition, and in discussing structures which may lead to its most effective use.

Table 1.1: Categorization of an organization’s knowledge (after Spender, 1996, p.52)

<table>
<thead>
<tr>
<th>Dimensions of knowledge</th>
<th>Individual</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explicit</td>
<td>Conscious knowledge – storable and retrievable from personal records or memory</td>
<td>Objectified knowledge – registered patents, designs, information stored on databases</td>
</tr>
<tr>
<td>Tacit</td>
<td>Automatic knowledge – based on individual theoretical and practical experience and learning</td>
<td>Collective knowledge – knowledge embedded in social and institutional practices, systems, workflows and culture</td>
</tr>
</tbody>
</table>

These different categories of knowledge have been positioned alongside each other by several authors. In his matrix of an organization’s knowledge (Table 1.1), Spender (1996, p.52) suggested how it can be viewed along the axes of explicit/tacit and individual/social. Collective knowledge has also been described as an aspect of non-canonical, or information knowledge sharing (Brown & Duguid, 1991), where day-to-day knowledge sharing practice and unstructured dialogue produce a richer and more informative practice than adherence to the canonical rules and procedures of knowledge management. The “generative dance”, the interplay between explicit knowledge and tacit knowing, is said to be a source of innovation for the organization (Cook & Brown, 1999, p.381).

On the other hand, the reification of knowledge by treating it as a classifiable set of elements has been criticised (Orlikowski, 2002, p.250). Adopting Ryle’s (1949) “knowing-how”, an alternative
view is to see knowledge as a process, as practice. Terms such as knowledgeability, or knowledge-in-action, express how knowledge and practice are linked. Following Polanyi, Tsoukas (1996, p.14) suggests that explicit and tacit knowledge are mutually constituted: the one cannot be understood, internalised, used, without the application of the awareness and attention implied by the other.

1.5 Knowledge in information systems

From the positivist perspective, knowledge consists of objective facts which exist independently in the real world. In this view, knowledge is considered to be value-free and not to depend on human interpretation. This perspective has been applied in knowledge management, in ways thought to be naive: “We seem to presume that knowledge is made up of discrete and transferable granules of understanding about reality which can be added to an extant heap of knowledge” (Spender, 1996, p64). The view is that knowledge can be treated as an asset which can be developed, represented, stored, transferred, applied, embedded (Hedlund, 1994, p,76). Seen in this way, the sharing of knowledge should be amenable to technological solutions and, given a good IS design, problems of transmission or use lie with the recipient. This perspective persists in the management of explicit knowledge in organizations (Hislop, 2005), in the development of Knowledge Management Systems and the provision of information tools to facilitate the use of the organization’s knowledge. Definitions of knowledge in information systems are briefly reviewed before an examination of alternative viewpoints.

Taking into account the role of Knowledge Management Systems and information tools in managing an organization’s knowledge, it is appropriate to consider some examples of what has been said about knowledge in Information Systems. A tendency towards a positivist approach is noticeable. Langefors (1995, p.107) discusses knowledge as “knowing some fact” (“know-that”) is indistinguishable from information: “information is structured knowledge, structured in such a way that it can be communicated”. “Methodological” knowledge is also needed: how to use what one knows in acting to reduce uncertainty in the situation (“know-how”). In his continuing meditations on informed action, Langefors’s views typify the attempts to separate information from knowledge. In Mumford’s (1987, p.136) account of directions of research into expert systems, she accepts Feigenbaum’s (1983) definition of knowledge as facts (widely shared and documented) and heuristics (experts’ rules of thumb based on experience), and expertise as a combination of the two, but goes no further. An uncritical approach to definitions of knowledge is evident in an account of knowledge management in software engineering, typified by the work of Lindvall & Rus (2002). While identifying the essentially human nature of knowledge (“The major problem with intellectual capital is that it has legs and walks home every day” (Lindvall & Rus,
According to Ackoff (1972, p.26), they adopt without question Ackoff’s view that knowledge merely “requires understanding of information” and is contained in information and the relationships between information items. In functionalist information systems research, a similar lack of curiosity is apparent in the work of Shah et al. (2007), where an action research method was used with knowledge workers in a large company, Britvic, without examining what knowledge is. Much that is called knowledge management amounts to sophisticated ways of acquiring, labelling and storing data, and presenting it as information, through the medium of information systems.

This approach has not produced the benefits looked for (Hislop, 2005) and it has been critiqued in the systems literature by Checkland (1981,1991): there is more to knowledge and knowledge sharing than merely making it available; the receptiveness of the individual or group with whom it is shared is as important. Paraphrasing Wittgenstein, Spender adds: “Knowledge comprises theoretical statements whose meanings and practical implications depend on their use and on the framework in which they are deployed… these days knowledge is less about truth and reason and more about the practice of intervening knowledgeably and purposefully in the world.” (Spender, 1996, p.64). The context of use, receptiveness of those with whom knowledge is shared, and the mutability of knowledge suggest that a more subjective approach is required.

1.6 Alternative approaches to defining knowledge

In the interpretivist tradition this perspective is accommodated by viewing knowledge as humanly constructed, involving cognitive and behavioural elements, existing as a “justified true belief” in the mind of the individual, based on meaningful accumulation of information through experience, communication, inference (Dretske, 1983, p.55). Knowledge is seen as subjective, dependent on context and interpretation by those engaged in it. Adopting the interpretivist tradition opens the possibility of examining human activity systems from the inside, and relations within and between organizations (Huber, 1991, in Spender, 1996, p.63). Organizational learning and communities of practice literature also takes this view (Tsoukas & Vladimirou, 2001, p. 979; Duguid, 2005, p.113). Objective knowledge (in the positivist paradigm) can only be made use of once it is appreciated subjectively, taking into account context, tacit knowledge, motivation, and the other aspects relating to human subjectivity, and “reattached to and embedded in the ongoing processes of the organisation” (Spender, 1996, p.64; Orlikowski, 2002, p.250). This can be harnessed to organizational learning, “the study of the learning processes of and within organizations” (Easterby-Smith & Lyles, 2011), and to the practicalities of knowledge management in its various forms (Treece, 2003 in Spender, 2009).

Asserting that the literatures on knowledge management and IT systems design have overlapped (Alavi & Tiwana, 2003, in Spender, 2009, p.160), Spender recategorizes knowledge for knowledge
management based on the actions resulting from their approaches to defining knowledge. Knowledge-as-data applies where IT systems are used to store, manipulate and store data. Knowledge-as-meaning is used to acknowledge the “lenses of meaning” placed over data to convert it to actionable information. Knowledge-as-practice recognises the translation of cognition into practice, for effective action (Spender, 2007, in Spender 2009, p.164). This last includes subjective qualities such as the importance of context and tacit understanding: “Practice is richer and more complex than the mere execution of cognition, and cannot be theorized within a framework of rationality and goal-seeking” (Spender, 2009, p.164). It has resonances with Polanyi’s views on the importance of the individual’s experience and is illustrated from an individual’s perspective by Bock’s knowledge cycle (Figure 1.2). The resonances between this view and Vickers’s Appreciative System are explored in Chapter Four.

1.7 Implications for knowledge management

In his conceptualisation of the organization as an institution for integrating knowledge, Grant (1996, p.109) asserted that knowledge is an organization’s most strategically significant resource. The different types of organizational knowledge identified above are created, assessed, coordinated, diffused and exploited in the process of knowledge management. As knowledge sharing is an important part of this process, the influences of various knowledge management styles are discussed here. Mention is made of the stages in the maturity of the knowledge management discipline, which have progressed it from a functionalist approach to the storage and use of knowledge/information (the terms often used interchangeably) in organizations, to one which acknowledges the human characteristics of its practitioners at all levels, whether as individuals, groups, or on an organizational level.

Early definitions of knowledge management show its corporate background, and how knowledge was defined as an asset: “the process of capturing, distributing and effectively using knowledge” (Davenport, 1994, p.119) or “a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise’s information assets...[which] include databases, documents, policies, procedures, and previously un-captured expertise and experience in individual workers” (Duhon, 1998, p.8). A cycle of activities is commonly agreed on to achieve this (Figure 1.3). As knowledge management has developed, the role of human activity is acknowledged. Von Krogh (in Easterby-Smith & Lyles, 2011, p.404) defines knowledge management as determining “how cognition and action [could] be tied to organizational performance.” Koenig & Jank (2012) propose that to do knowledge management is to: “capture and make available, so it can be used by others, the information and knowledge that is in people's heads as it were, and that has never been explicitly set down”. In their account of the stages in
the development of knowledge management (from recording lessons learned, through communities of practice, to developing content management and taxonomies of knowledge), they see knowledge management as moving from an IT-based discipline, to one acknowledging the need for consideration of the human dimension, then back to a more functionalist view where knowledge is once again compartmentalised for use by the organisation. Rubenstein-Montano et al. (2001, p.16) recommend a holistic approach in developing knowledge management frameworks, embedding the knowledge cycle in the organizational culture. Both codification (including separate treatment of explicit and tacit knowledge) and personalization (development of a network of people for communicating ideas) strategies are needed. Double-loop learning, adjusting the goal in light of experience, is also a feature.
Different perspectives on knowledge management are encapsulated in the models developed by Kakabadse et al. (2003, p.85) and Simard and Joudeuil (2012, p.28). Kakabadse et al. categorise knowledge management models using a context/approach grid (Figure 1.4) where the different treatments of knowledge (as “justified true belief”, objectively codified facts, external to the adopter, constructed socially) and to different styles of knowledge management. They suggest that in the future, new levels of complexity and decision making will require the development of “wisdom” facilitated by the technological advances of quantum computing (Kakabadse et al., 2003, p.84).

**Figure 1.4: Comparison of knowledge management models (after Kakabadse et al., 2003, p.85)**

<table>
<thead>
<tr>
<th>Context</th>
<th>Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic</td>
<td>Network KM Model</td>
</tr>
<tr>
<td>(Knowledge</td>
<td>Philosophical KM Model</td>
</tr>
<tr>
<td>Generation)</td>
<td></td>
</tr>
<tr>
<td>Operational</td>
<td>Cognitive KM Model</td>
</tr>
<tr>
<td>(Knowledge</td>
<td>Community KM Model</td>
</tr>
<tr>
<td>Application)</td>
<td></td>
</tr>
<tr>
<td>Quantum KM Model</td>
<td>Integrative</td>
</tr>
<tr>
<td>(paradox and</td>
<td>Interactive</td>
</tr>
<tr>
<td>possibilities)</td>
<td></td>
</tr>
</tbody>
</table>

Of the several perspectives on knowledge management examined by Kakabadse et al. (2003), the Community Model has most to say about knowledge sharing from a human dimension. Taking the view that “all knowledge, not just scientific knowledge, is founded in the thinking that circulates in a community”, community models build on the concept that knowledge cannot be separated from practice; that the management of knowledge is also based on “interpersonal relationships, respect and trust” (Kakabadse et al, 2003, p.84).

Simard and Jourdeuil base their categorization of knowledge management regimes on the “Cynefin” sense-making framework (Table 1.2). They assert that in practice aspects of each regime are present in an organization (Simard & Jourdeuil, 2012, p.29).
Table 1.2: Knowledge Management Regimes (Simard & Jourdeuil, 2012, p.28)

<table>
<thead>
<tr>
<th>Authoritative hierarchy</th>
<th>Explicit knowledge is approved and embedded in organizational processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational structure</td>
<td>Explicit knowledge is codified and interpreted to coordinator organizational processes</td>
</tr>
<tr>
<td>Negotiated agreements</td>
<td>Tacit knowledge is exchanged among individuals and communities</td>
</tr>
<tr>
<td>Responsible autonomy</td>
<td>Innate knowledge is voluntarily used by individuals to create new knowledge</td>
</tr>
</tbody>
</table>

These taxonomic approaches attempt to organize knowledge management activities, at different levels of analysis, into an overall structure. In their discussion of knowledge taxonomies and the multi-faceted definitions of knowledge in organizations, Alavi and Leidner (1999) suggest that “no single or optimum approach to organizational knowledge management and knowledge management systems can be developed.” Quoting Schultz (1998), that interpretivists view knowledge as a process, they assert that one legitimate direction for knowledge management research is to explore the tacit knowledge held by the employees and hold out the hope that better use of IT can help knowledge management systems to move beyond “traditional storage and retrieval of coded knowledge”. Suggesting that interpretivist study of knowledge management as an “organizational phenomenon” is possible, their recognition of the relationship between tacit knowledge and knowledge worker effectiveness as a legitimate area for research is limited, however, to identifying variances in knowledge needed and available knowledge, and search strategies.

1.8 Thoughts on knowledge sharing

Riege (2005, p.21) suggested that, as individualism is valued in particularly Western companies, individuals should be made aware of the value of knowledge sharing, to encourage them to engage with processes leading to collective knowledge. It is suggested that as knowledge-as-practice has the quality of “in-headedness”, sharing this knowledge happens at core at an individual level. The context in which this takes place is collective, and the team and organization-level units of analysis are explored in Chapter Two.

An examination of two influential knowledge management frameworks, proposed by Nonaka and Takeuchi (1995) and Davenport and Prusak (1998), sets the context for looking at knowledge sharing. Working in the context of Japanese companies, Nonaka and Takeuchi (1995) saw knowledge management as a means to create new knowledge continuously. They emphasised the “justified belief” elements of knowledge, where “a dynamic human process of justifying personal
belief towards the truth” (Nonaka & Tackeuchi, 1995, p.58 in Choo, 2003) was accomplished in enabling and nurturing organizational settings (which they called “ba”). A core mechanism for achieving this was proposed by Nonaka (1994, p.20), who conceptualised knowledge transfer from tacit to explicit, and from explicit back to tacit. This was codified in the SECI knowledge creation cycle (Figure 1.5): “In the spiral of knowledge creation, the interaction between tacit and explicit knowledge is amplified through the four modes of knowledge conversion” (Nonaka & Toyama, 2003, p.6). This interchange between tacit and explicit involves first “Socialization” (building teams to allow sharing of knowledge), then “Externalization” (encouraging the articulation of team perspectives, revealing “hidden tacit knowledge that is otherwise hard to communicate”), followed by “Combination” (coordination of knowledge with repositories of existing knowledge) and “Internalization” (as team members grasp the knowledge by practicing it).

Here, tacit knowledge is viewed as not-yet-articulated, and able to be transformed into explicit knowledge through an iterative process of dialogue, questioning of assumptions, amplifying and reviewing. Criticisms of this view (Tsoukas and Vladimirou, 2001, p.975; Tsoukas, 2011, p.453); follow Polanyi & Prosch (1975) in asserting that tacit knowledge cannot be articulated because we cannot express to others the bodily skills, interiorised through practice, which allow us to make use of the knowledge we have. Li and Gao (2003) defend Nonaka’s position on the articulation of tacit knowledge in organizations, based on a distinction between implicitness and “real” tacitness. Their definition of implicitness is that which one can articulate “but is unwilling to do ... because of specific reasons under certain settings (such as .... cultural custom, or organizational style)” (Li & Gao, 2003, p.8). The implications of this view in the field study are discussed on page 188. They further state that Japanese language is vague and imprecise, with implicit mutual understanding being privileged, and that the SECI cycle, derived from observations of how the Japanese manufacturing industry operated and innovated, was context-dependent, and perhaps not
transferable whole-sale to other cultures. This concept of context fits well with the interpretivist view of knowledge.

The second framework, developed by Davenport and Prusak (1998), is based on a definition of knowledge as “a ... mix of framed experience, values, contextual information, and expert insight [providing] a framework for evaluating and incorporating new experiences and information” (Davenport & Prusak, 1998, p.5 in Choo, 2003). It “originates and is applied in the minds of knowers”, is embedded in repositories and in organizational routines. This definition is congruent both with an interpretivist approach and with Spender’s category of knowledge-as-practice. Davenport and Prusak saw organizations as “knowledge markets”, where the exchange of knowledge between stakeholders depended on reciprocity, reputation and altruism, and an environment of trust is needed to make the market work (Choo, 2003, p.210). In this “operational” view, processes are identified for the generation, codification and transfer of knowledge. These two frameworks suggest the complexities of realising knowledge at an individual level, and the individual qualities needed for its sharing; Davenport and Prusak assert that “the sharing of knowledge between people and groups in an organization may be the most daunting task in knowledge management” (Choo, 2003, p.211).

1.9 Thesis structure

The argument is developed in the following chapters. Studies into knowledge sharing have ranged over a number of other perspectives and these are explored further in Chapters Two and Three. In many cases, the methodology has been taken from the positivist tradition, and claims of general applicability have been made; there appears to be a mismatch between the essentially subjective nature of the subject matter and the means used to research it. The deficiencies of this theoretical approach are explored, a case is made for an interpretivist exploration of the knowledge sharing. Literature from an alternative, interpretivist, perspective is reviewed, which includes action research studies carried out in Information Systems and organizational learning.

In Chapter Four, the methodology for this exploration is described and justified and an account is given of how the researcher developed the necessary competence in it. The research design and the field study itself are in Chapters Five and Six. The methodology being participant-driven, the participants determined issues important to them in the course of the study. A prior judgement about what would be considered to be important could not be made; the findings from the field study were used in further examination of the literature (p.169). Chapters Seven and Eight are given over to reflection on the study and on the lessons learned from it. The significance of the research in demonstrating the effectiveness of an interpretivist methodology for investigating
knowledge sharing is described in Chapter Nine. This chapter also contains suggestions for further research directions and transfer of ideas.
Chapter 2: Models of knowledge sharing

2.1 Investigating knowledge sharing

The topic of knowledge sharing was introduced in Chapter One and two frameworks for achieving it were discussed. Its essentially individualistic characteristics were touched on, but there are many other influencing factors which have been discussed from several perspectives. In this chapter, literature on knowledge sharing is reviewed to provide context for the research. Much of the literature on specific aspects of knowledge sharing is functional in nature, and social and psychological theories invoked when developing and testing knowledge sharing models. The chapter concludes by assessing the limitations of this approach, where the initial definition of knowledge suggested in the previous chapter focuses on its subjective nature. In Chapter Three, an alternative, interpretivist, perspective is explored.

2.1.1 Literature search

Many authors discussing knowledge sharing blur the distinction between definitions of information and knowledge, or believe that it is not important, or that functionalist definitions meet the case in organizational settings: for example, “knowledge [is] information processed by individuals including ideas, facts, expertise and judgements relevant for individual, team and organizational performance” (Alavi & Leidner, 2001; Bartol & Srivastava, 2002 in Wang & Noe, 2010, p.117). From this perspective, they define knowledge sharing as “the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures” (Wang & Noe, 2010 , p.117). For von Krogh (in Easterby-Smith & Lyles, 2011, p.405) on the other hand, knowledge sharing is a multi-way activity pervading all knowledge management, involving “trial and error, feedback and mutual adjustment”. Rather than knowledge sharing being “a simple process of communicating information”, by this definition it is “a problem of collective action among actors with diverse and distributed interests” (von Krogh, in Easterby-Smith & Lyles, 2011, p.423). This view also accords with the definition of knowledge-as-practice discussed in the previous chapter.

A distinction is made between knowledge sharing, knowledge transfer and knowledge exchange. Using Simmel’s (1908) ideas on social interaction, Szulanski (1996, p.28) defines knowledge transfer as a “dyadic exchange of organizational knowledge between a source and a recipient unit in which the identity of the recipient matters”, while Dixon (2010, p.144-145) categorises knowledge transfer processes using factors including the type of knowledge, the frequency of the sharing process and the characteristics of the receiver. Knowledge transfer, however, has been described as an impoverished metaphor (Bechky, 2003, p.313); rather than the meaning of an
Figure 2.1: A framework of knowledge sharing research (Wang & Noe, 2010, p.116)

Environmental Factors
- Organizational context
  - management support
  - rewards/incentives
  - organizational structure
- culture/climate
- leadership characteristics
- context (online, face-to-face)

Interpersonal and team characteristics
- team characteristics/processing
- diversity
- social networks
- team development stage

Cultural characteristics
- collectivism
- in-group/out-group
- other cultural context

Motivational factors
- beliefs of knowledge ownership
- perceived benefits and costs
- justice
- trust
- individual attitudes
- social costs
- team level trust and cohesiveness
- LMX

Perceptions related to knowledge sharing
- knowledge sharing intention
- intention to encourage knowledge sharing

Knowledge sharing behaviors

Individual characteristics
- education
- work experience
- personality
- self-efficacy
- evaluation apprehension
- impression management
- perceptions: e.g., knowledge as power

Topics examined in the literature

Topics needing future research

Relationships examined in current research

Relationships needing future research
element of knowledge being universal and contexts of transfer homogenous, the recipient’s comprehension of the transferred knowledge differs depending on his/her situation. The term knowledge exchange is often used interchangeably with knowledge transfer, but its definition as the reciprocal seeking and sharing of knowledge at an individual or collective level distinguishes it from sharing as a collective endeavour. It was suggested (p.12) that the human dimensions of knowledge sharing are best expressed using a practice-based definition of knowledge management. So, when focusing on the sharing or dissemination parts of the knowledge cycle, it is appropriate to look at literature which emphasises these aspects.

Surveying quantitative and qualitative research into the interpersonal and organizational aspects of knowledge sharing, Wang and Noe (2010) presented a framework (Figure 2.1), categorizing areas of research emphasis, ranging from the organizational context, through interpersonal and team characteristics, cultural and individual characteristics, to motivational factors. Areas in need of further research were identified, including those that influence collective, subjective knowledge-as-practice: motivational and cultural factors, interpersonal and team characteristics and the individual sphere. For this thesis, a literature search was conducted to explore further the features of knowledge sharing and the contexts in which it has been discussed. The subject areas examined were: knowledge management, social science, organizational learning, information systems and areas of general management (including strategic management and human resources). The databases used were: Business Source Complete, ACM Digital Library and Engineering Village Compendex, and numerous e-Journals were also searched where these were not in the databases (for example, Knowledge Management & Practice). The Science and Social Science citation indexes were used to find articles most cited. The search had parallels with that conducted by Wang and Noe (2010), but discovered material published in 2013, whereas the most recent publication date in Wang and Noe’s search was 2008. Search terms used are summarised in Figure 2.2. These were based around the knowledge cycle (Figure 1.3), but excluded terms which implied a functionalist or instrumental approach such as “knowledge discovery”, “knowledge dissemination”, “knowledge transfer” and “knowledge exchange”. As many authors conflate knowledge with information, “information” was included to discover any resources which used it in the context of knowledge sharing. Synonyms for knowledge, taken from the different subject areas, were used (e.g. “intellectual capital”). A search for “negatives” was also carried out (e.g. “communication failure”). Further search terms were used as suggested by key words and abstracts.
When deciding which search results were relevant to the thesis, a narrative technique was used, examining the abstracts of the article. For “knowledge sharing”, for example, 2225 search results yielded 137 relevant sources. Those which concurred with the definition of knowledge as a collective practice (p.13) were selected in favour of those which used a more functionalist definition, or where the use was knowledge-as-information. Resources were discovered which took as their focus of study a wide range of knowledge sharing settings, from consultancies and research and development companies through to virtual knowledge sharing communities. Articles about production and manufacturing were examined for their insights into the sharing of tacit knowledge (e.g. Bechky, 2003). However, literature on knowledge sharing and national culture was not examined closely, being outside the scope of the thesis at this point; the subjects for study of knowledge sharing were sited in different countries but the literature which had an overtly nationalistic cultural position (for example Hong et al.’s (2003) study on the influence of Chi, the Chinese concept of life force, on knowledge sharing, was omitted).

Authors tended to cite the work of Wang and Noe (2010) uncritically, using it as a position from which to explore further or extend the ideas. Many of the quantitative studies gave a brief review of the literature on knowledge (e.g. xx quoting yy) but definitions of knowledge used those of Wang and Noe, or did not acknowledge the subjective aspect of knowledge sharing which were of interest in the current research. Further critique of the literature, for example its neglect of the situatedness of its findings, is given at the end of the chapter. The following section explores some of the inter-subjective elements found in the literature.
2.1.2 Organizational perspective

The topic of knowledge sharing is extensive and has many aspects that influence each other. These are discussed separately, on the understanding that they are interlinked. The main purpose of knowledge sharing in organizations is to enable members to benefit from each other’s knowledge and expertise, allowing them to contribute ideas and experience (Ipe, 2003, p.338; Hansen et al., 2005, p.776). Knowledge sharing is thus crucial to the success of organizations, and particularly so in research and development. In knowledge management terms, its importance in the knowledge cycle is influenced by the organizational context, the intended user, and the specific purpose for which it is deployed. The value to the user is a motivator for knowledge sharing. Figure 2.3 shows the initial aspects discovered in the literature.

**Figure 2.3: Knowledge sharing context and influences**

Reviewing the models of knowledge management and sharing in the literature raises many questions about the nature of knowledge sharing. Additions to the Wang and Noe (2010) schema (Figure 2.1) can include the nature of knowledge being shared (which can be classified as explicit or tacit), the mechanisms used, and units of analysis by which the whole can be viewed (the individual, the group and the organizational levels). Figure 2.4 summarises the findings from the literature, as far as it is possible taking into account the context-dependent nature of many of the studies.

In the organizational context, organizational culture and structure, management support and incentives have all been found to influence the likelihood of employees to engage in knowledge sharing. It has been proposed (Nonaka, 1994, p.14; Calantone et al., 2002, p.515) that effective sharing of knowledge is a critical success factor for organizations. Evidence for this and ways of setting the management culture have been discussed in the strategic management literature (e.g. Alavi & Leidner, 1999).
Figure 2.4: Unified model, from ontological models in the literature

Knowledge Sharing Behaviour

- Social
  - Psychological
  - Motivation
    - Intrinsic
      - Reputation
    - Extrinsic
      - Impression management
      - Trust/Reciprocity
      - Evaluation apprehension
    - Evaluation of expectation

Knowledge Sharing Barriers

- Organizational level
  - Competition for resources
  - Unrealistic expectations/ineffective use of KMS
  - Disconnection between KM strategy and goals

- Individual level
  - Power relations/inequalities in status
  - Cultural differences
  - Poor communication skills
  - No time/resources to share

- Team level
  - Identifying appropriate knowledge

Knowledge Sharing Mechanisms

- Organizational level
  - Knowledge Management System
    - Structure
    - Support
  - Communities of practice
    - Social/professional networks
    - Diversity
  - Learning experience
    - Incentives

- Individual level
  - Personal vision
  - Shared vision

Perceived Value of Knowledge

- Intangible
- Tangible

Knowledge Management System
The importance of a shared vision is acknowledged, and the role of management in removing barriers and providing incentives is discussed. Examples are given of breaking down silos within the organization, encouraging inter-team communication (Tsai, 2002, p.188), providing time and resources for knowledge sharing, and correctly structuring tangible and intangible reward mechanisms (Dyer and Nobeoka, 2002). Motivation for knowledge sharing has different aspects depending on the unit of analysis; Figure 2.5, developed from the literature on motivation, shows how different motivational drivers can operate at each level; the task of management is to ensure that the range of motivations leading to knowledge sharing action are actuated down to the level of the individual. Motivations for sharing knowledge can be examined in terms of impression management and power, social costs, the experience of learning and evaluation apprehension (Wang & Noe, 2010, p.124). The impact of information technology, whether as an aid or a hindrance, is also important.

Figure 2.5: Motivation for knowledge sharing at organizational units of analysis

Cultivating a shared vision is seen to be a management responsibility (Orlikowski, 2002, p.257; Chiu et al, 2006), and works best in organizations where the culture is of cooperation for the common good, rather than competition between teams. The role of management, or external bodies, as agents who exert their influence from outside the sharing situation is described by von Krogh (in Easterby-Smith & Lyle, 2011, p. 409). A range of initiatives is suggested, including a multi-layered matrix management (Nonaka & Tackeuchi, 1995), to promote interconnectedness between business and project-level systems. There are limits to how these can be made meaningful at an individual level, particularly for sharing of tacit knowledge.
2.1.3 Team perspective

The mechanisms of knowledge sharing are also examined from the interpersonal and team perspective. The role of social networks in facilitating or hindering knowledge sharing is discussed by Hansen et al. (2005) and Chow et al. (2008). They have effects which are more complex than would be expected at first inspection. Greater connectivity of an individual in a network, or of a team in a multi-unit organization, not surprisingly, has been found to facilitate the flow of knowledge. This effect is enhanced by diversity within teams, where team members may have various links across team boundaries, bringing different perspectives and resources to bear on problems (Cummings, 2004, p.352). On the other hand, where teams are in competition for internal resources, knowledge sharing is impacted (Tsai, 2002, p.188).

There is a difference in context between knowledge sharing in a community of practice and knowledge sharing between expert and seeker in a specific knowledge management episode. Much has been written about knowledge sharing in communities of practice; Wenger et al. (2002, p.20) are clear about the benefits to be obtained from setting up these cross-organizational structures: the ability to respond effectively to challenges to the organization, self-organization of the community and free-flowing creative ways of problem solving and sharing best practice. An assessment of the barriers to knowledge sharing in communities of practice, and some suggestions about the ways individuals can be encouraged to share is given by Ardichvili et al. (2003, p.72). This can be compared with literature on the motivation of the individual to share (Lin, 2007, p.145), particularly knowledge sharing intention and intrinsic motivation factors, and how user demand for knowledge influences it. An important reason for the development of communities of practice is the difficulty of communicating tacit knowledge by more formal means, and its effective sharing is an underlying theme of this thesis.

2.1.4 Individual perspective

Knowledge sharing literature exploring the individual perspective focuses on the social and psychological drivers which influence knowledge sharing. The sociological theories that are invoked to provide explanations are described briefly in Para. 2.2. Aspects considered include motivation, knowledge sharing intention and knowledge sharing behaviour. For example, Chen et al. (2012) list the factors affecting individuals’ attitudes towards knowledge sharing. These include factors intrinsic to the individual: self-efficacy, enjoyment in helping others, concern for one’s reputation, and trust, both that others will reciprocate in the sharing practice, and in the organization’s procedural fairness. They also include interpersonal factors as they affect the individual: the social norms and networks in which the individual and knowledge sharing practice are situated, the calculations of the costs (in terms of time and effort) and benefits, and apparent effectiveness of sharing. These aspects of knowledge sharing have been framed as an example of
a social dilemma relating to knowledge ownership, where the desire of the individual not to lose standing by divulging what he/she knows is set against the greater good which would result (Dyer & Nobeoka, 2002; Cabrera & Cabrera, 2002, p.693). The perceived benefits and costs of sharing knowledge for the individual, and the effect on an individual’s self-efficacy have been investigated by Hsu et al. (2007, p.166), including the influence of self-belief and the impact this might have on the willingness to share. Many studies have highlighted aspects which have a bearing on solving this dilemma, insights into interpersonal trust and procedural justice – the perceived fairness of practices acknowledging or rewarding the knowledge owner (e.g. Chiu et al., 2006, p.1883; Collins & Smith, 2006). There are similarities with the work of von Krogh on care, community and opportunity structures (von Krogh, in Easterby-Smith & Lyle, 2011, p. 415).

2.1.5 Barriers to knowledge sharing

The literature and models already discussed focus on how knowledge sharing can be facilitated. The reality is that there are many factors operating at the individual and organizational level which hinder it (Riege, 2005, p.23), and which are more likely to be the default setting to be overcome by knowledge sharing initiatives. Considering the barriers to knowledge sharing can shed light on its processes and the influences which affect it (Connelly et al., 2012, p.65). Using the metaphor of knowledge as a market, Matson et al. (2003) (Figure 2.6) list some of the problems which research into knowledge sharing has attempted to address.

**Figure 2.6: Common knowledge market failures (Matson et al., 2003)**

At an individual level, barriers include poor communication skills and social networks, differences in culture, the power relationships around inequalities in status, insufficient time to share and low
levels of trust between individuals. Employees’ fear of sharing knowledge is said to be related to concerns about job security; knowledge hoarding and hiding behaviours result (Connelly et al., 2012, p.64). At the organizational level, barriers include a disconnection between knowledge management strategy and organizational goals leading to insufficient incentives to share, lack of managerial direction, resources and infrastructure (e.g. accessibility of meeting spaces). Riege also discusses technological barriers which have human dimensions: a mismatch between what is needed and what is provided, unrealistic expectations of how Knowledge Management Systems will perform, and unwillingness to use a Knowledge Management System, either to populate it or to extract information from it. Comparison of this list with the barriers discovered in the field study is made in Chapter Nine.

2.2 Use of sociological and psychological models

Many authors turn to the positivist tradition, expressed in functionalist approaches from the fields of sociology and psychology, to attempt to validate these claims about the characteristics of knowledge sharing. Following Durkheim, it is proposed that social reality is made up of social structures which act on individuals, and that it is possible to deduce universal law-like patterns for which explanations can be sought (Checkland, 1999, p.267). Popper’s seventh thesis stated that “in social science, an explanation will usually consist of a model of a situation and a ‘rationality principle’ which define action rational in that situation” (Checkland, 1999, p.266). A number of theories from sociology and psychology are invoked in the knowledge sharing literature (Chen et al., 2012, p.114; Abzari et al.,2011; Okyere-Kwakye et al., 2011, p.68)). The sociological theories and approaches range from those which seek explanations from the perspective of the individual, to those which operate at the group or organizational unit of analysis. Although the theories’ ideas and insights are suggestive and may be useful in explaining aspects of knowledge sharing, there are issues in testing them empirically. Authors claim to validate social theory, as it relates to knowledge sharing. Employing mainly quantitative data collection methods, they uncritically co-opt theory to provide a framework for their research, to discover and explain the patterns, also making claims about the universality of the findings. As the theories deal with similar aspects of human activity and thought, much of what they say is inter-related and it seems to be a matter of what outcome is desired when an author decides which theory is espoused for a piece of knowledge sharing research. The most frequently used theories are discussed below, for the insights they may provide, and to showing some of the attempts to use them in the knowledge sharing literature.
2.2.1 Social Network Analysis

Social Network Analysis (a strategy rather than a bona fide theory (Otte & Rousseau, 2002, p.441)) is an application of network theory, used in the context of social theory, suggesting that individuals are linked by a mesh of connections, an “intertwining of social relations” (Scott, 1988, p.109). The metaphor of the social fabric is used by Toennies (1887) and Simmel (1908), marking the interconnectedness or ties between individuals, and social network analysis is used in a number of sociological settings, including organizations. Concepts used include: “centrality”, how central actors are in their networks; “density or connectedness”, the relative number of connections an individual has; “clique”, clusters of density which might indicate different activity such as the number of people an individual is aware of in an organization, or the numbers he/she actually works with. Other terms include propinquity (the tendency for individuals to have more ties with those who are geographically closer), reciprocity (mutual advantage) and tie strength (influenced by time, emotional attachment and reciprocity), all of which can be applied to organizational activities. The insights of the mathematical approaches of graph theory and topology have been used to suggest that aspects of social networks can be measured. Although the network analogy is powerful, a criticism (Scott, 1988, p. 121) is that individuals are complex structures, rather than merely points in a network. This realisation has led to further mathematical developments to address the criticism (e.g. algebraic topology, which uses several dimensions). The relative ease with which the necessary data can be collected has led some researchers in knowledge sharing to apply the analysis in a mechanistic way (described below), without considering greatly the meaning or implications of what is being discovered.

The mathematical antecedents of Social Network Analysis make it attractive when identifying and classifying social networks for knowledge sharing. A particularly full example of this is the work carried out by Allen et al. (2007) at Imperial Chemical Industries (ICI), where they used the technique to map formal and informal networks in the organization. They discovered inefficiencies in how the formal network was used, and the importance of the informal network for knowledge sharing, but also its fragility, and made recommendations for management action. Using different instruments, Ehrlich et al. (2007) came to the same conclusion in the context of expertise location. Similarly, Hansen (2002) discovered the importance of lateral linkages for knowledge sharing between units in multi-unit organizations. On the other hand, there is the danger that claims made for the causality implied by the strength or weakness of a social network identified in this way are too great. Liao and Xiong (2011, p.1893) conducted analysis on communities of practice and concluded baldly that strong ties promote the sharing of implicit knowledge, whereas weak ties imply that only explicit knowledge is shared. Kakabadse et al. (2006, p.84), nevertheless, recognise how patterns of links between groups and individuals, maintained through social relations, can facilitate knowledge sharing.
2.2.2 Social Cognitive Theory
Models of motivation are referred to in the knowledge sharing literature, both for explaining individual behaviour and, at an organizational level, creating structures which motivate employees to share knowledge. A theory much referenced is Social Cognitive Theory (Bandura, 1989). This relates to the way people acquire and maintain behavioural patterns. Learning behaviour happens in a social context and is influenced by a triad consisting of personal factors, behaviour and environment (social and physical), which interact with each other reciprocally. Bandura later suggested (Bandura, 2001) that a key personal factor was human agency, the ability to act in the situation, and crucially, one’s self-belief as being able to act (self-efficacy). Self-efficacy is influenced by self-regulation and reflection, and behavioural acquisition is influenced by expectation and learning through observation. Bandura (2001) identified different levels of human agency, including direct personal agency, proxy (relying on others to act), and collective (depending on social coordination and interdependence). Other motivation models, relating to employee involvement or skills based rewards, but these have not been used in the literature on knowledge sharing. Social Cognitive Theory has been criticised for being overly complex. The expectation that behaviour will change due to environmental factors has not been borne out in practice. Similarly, by focusing on the cognitive aspects of the individual, factors such as genetic or biologic influences are neglected. In Tsai et al.’s (2010) quantitative study of knowledge sharing intentions among software programmers, they use Social Cognitive Theory to identify self-efficacy and outcome expectation as personal factors, but focus solely on social cognition at an individual level. This is a common use of the theory in knowledge sharing studies, contributing to ideas about individual agency and efficacy (Bock et al., 2005; Lin, 2007).

2.2.3 Social Capital Theory
Other sociological theories used in the knowledge sharing literature have to do more with aspects relating to interpersonal interaction. In Social Capital Theory, social capital is broadly defined as the “features of social organization such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit” (Putnam, 1995, p.67). The premise of this theory is that social capital has value, and in the organizational context, individuals and groups draw on it to achieve their goals. It can operate at units of analysis ranging from individual (incorporating bonding and linking) to the community (“the sum of the resources, actual or virtual, that accrue ... by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (Bourdieu & Wacquant, 1992, p.119)). Norms of reciprocity, the expectation that people in receipt of benefits will also provide them, are an important element. In the organizational context, an individual’s ability to operate may depend on how they exercise their social capital. Amongst the criticisms of Social Capital Theory, Haynes (2009, p.8) takes issue with describing it as a theory, calling it rather an umbrella term for
a collection of themes to do with trust, reciprocity and group action, questioning its explanatory power, the ability to put it into practice, and the fact that it does not address the negative consequences of using social capital.

**Figure 2.7: Individual Motivations, Social Capital and Knowledge Contribution (Wasko & Faraj, 2005, p.40, after Nahapiet & Ghoshal, 1998, p.251)**

<table>
<thead>
<tr>
<th>Individual Motivations</th>
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</thead>
<tbody>
<tr>
<td>Reputation</td>
</tr>
<tr>
<td>Enjoy Helping</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Structural Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centrality</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cognitive Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-rated Expertise</td>
</tr>
<tr>
<td>Tenure in the Field</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relational Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitment</td>
</tr>
<tr>
<td>Reciprocity</td>
</tr>
</tbody>
</table>

Nonetheless, the ideas of social capital have been widely examined in the knowledge sharing literature. For example, in their quantitative study of social capital and knowledge contribution in electronic networks, Wasko and Faraj (2005, p.40) adopted and tested Nahapiet and Ghoshal’s (1998) model of different types of social capital and their combination with intellectual capital to produce and share knowledge (Figure 2.7). Huysman and Wulf (2005, p.8) invoke ideas about social capital in assessing the contribution of information systems to the effectiveness of knowledge sharing, and Widen-Wulff and Ginman (2004, p.455) discuss how the different dimensions of social capital can be included in a framework to aid understanding of how knowledge sharing works in organizations. Oldroyd and Shad (2012, p.396) discuss how the ideas of social capital can be used to assess the pressures on knowledge workers frequently consulted in their organizations.
2.2.4 Social Exchange Theory

Linking interpersonal interaction and motivation, Social Exchange Theory (Homans, 1958; Blau, 1964; Emerson, 1976) proposes that humans are rational and goal-oriented, and are trying to maximise the benefit to themselves when engaging in social exchanges, calculating the benefits and costs of doing so. The rewards offered by social exchanges will reinforce the social interaction behaviour. In a competitive environment, those with greater resources have more power, so “exchange processes lead to differentiation of power and privilege in social groups” (Chibucos, 2004, p.138). A corollary is that those with less to gain from a social exchange also hold more power in the situation. On the other hand, where exchange relationships are perceived to be equal, reciprocity fosters satisfaction. A related theory is that of Social Interdependence (Johnson & Johnson, 1989), said to exist when an individual is affected by actions of others when trying to achieve a goal. Interdependence is classified as positive (cooperation) or negative (competition). Deutsch (1949) stated that “self-interest becomes expanded to mutual interest through other people’s actions substituting for one’s own, through an emotional investment in achieving goals... and through an openness to being influenced so that joint efforts are more effective.” An obvious criticism of these theories is that by treating the individual as a rational being, the “affective”, emotional aspects influencing behaviour are not taken into consideration. Social Exchange Theory has been used to inform ideas about reciprocity in knowledge sharing (Bock & Young-Gul, 2002; Hall in Widen-Wulff & Ginman, 2004; Liao, 2008).

2.2.5 Theory of Reasoned Action

The Theory of Reasoned Action, derived from social psychology (Fishbein & Ajzen, 1975), predicts a person’s relative strength of intention to carry out a behaviour. The factors examined by the theory are attitudes (the sum of beliefs about a behaviour weighed by evaluations of those beliefs), subjective norms from the individual’s social environment and behavioural intention. Shepherd et al., (1988) discussed limiting conditions on the use of attitudes and subjective norms to predict intentions, and the use of intentions to predict behaviour: the difference between goals and behaviours, intentions and estimates, and the presence of choice of alternatives. A further development from this is the Theory of Planned Behaviour (Azjen & Fishbein; 1980), which includes perceived behavioural control (what the individual thinks is a control on their behaviour) as a factor in the decision to act. These theories acknowledge that individuals act in a social setting and are subject to the prevailing social norms, but they have been criticised for concentrating on cognitive processes and overlooking the emotional, or affective, aspects of human experience. O’Keefe (2002) has commented that individuals’ attitudes appear more significant in determining behaviour than subjective norms.
Bock et al. (2005) use the Theory of Reasoned Action as a theoretical framework in their investigation of the factors supporting or inhibiting individuals’ knowledge sharing intentions, although they deviate from the standard theory in acknowledging the collective nature of knowledge sharing and the organizational influences on it (Figure 2.8). Lin (2007) incorporated a motivational perspective into the theory in his study of the role of extrinsic and intrinsic motivators of knowledge sharing intention. In Cabrera and Cabrera’s (2005) study of how knowledge sharing could promoted by management practice, they used the theory as their starting point for examining individual motivation to share knowledge, combining it with the sociological theories of Social Exchange, Social Capital and Social Dilemma to form their research model. This appears to be common practice amongst many authors, using ideas from more than one theory to investigate knowledge sharing.

These theories cited in the literature on knowledge sharing show varying explanatory power. Social Network Analysis was used by Cross et al. (2001) to calculate the degree of connectedness of subgroups in an advice network based on quality of knowledge conceptualised as social relations. Social Capital Theory, dealing with “the norms and networks facilitating collective actions for mutual benefit” (Woolcock, 1998, p.155) and taking into account dimensions such as the purpose and type of benefit, reciprocity and trust, personal and collective efficacy, has been
cited by Huysman & Wulf (2006) in their work on motivation in knowledge sharing. Social Interdependence Theory seeks to explain how the accomplishment of an individual’s goals is influenced by others and has been cited by Shoghi et al. (2013) in their work on contingency in knowledge sharing behaviours. Other theories cited treat the individual as a rational being, so for example Social Exchange Theory assumes that in attempting to maximise their likelihood of achieving their aims in social exchanges, humans are rational and make rational decisions. Models of motivation have been used to explain individual attitudes to knowledge sharing: in Social Cognitive Theory, the way in which individuals maintain behavioural patterns is linked to the interaction between the individual, the behaviour and the environment in which the behaviour is performed. Some authors attempt to combine ideas from the different theories into unified models, for example Chiu et al.’s (2006) integration of social capital and social cognitive theory to examine motivations behind knowledge sharing in virtual communities.

2.3 Critique of the functionalist nature of the literature

The literature describes characteristics of knowledge sharing at the different levels of analysis, and the influences on its effectiveness. Many of the sources describe quantitative studies, proposing hypotheses and establishing correlations between aspects of knowledge sharing but without necessarily demonstrating causality. In their survey of knowledge sharing, Wang and Noe (2010, p.126) classified one-third of the literature examined as qualitative field studies and they compared the richness of the findings from these favourably with the quantitative studies. However, as has been seen, models of knowledge sharing are mostly defined in the quantitative studies to provide context for the hypotheses presented, and most make use of the sociological and psychological theories described above. The quantitative study by Hsu et al. (2007) is an example of this approach. Hypotheses were developed based on Social Cognitive Theory, to explore the role of trust in knowledge sharing behaviour in virtual communities and the responses to a questionnaire administered to members of virtual communities and professional societies in 39 Taiwanese cities were statistically analysed to assess the validity of the measurement elements “(economy-based trust, information-based trust, identification-based trust, self-efficacy, personal outcome expectations, community-related outcome expectations, and knowledge sharing behaviour)”. The hypotheses were evaluated according to the strength of the statistical relationships. The conclusions drawn were related back to Social Cognitive Theory.

The questions about this study could be applied to a greater or lesser extent to the other quantitative studies. Social Cognitive Theory focuses on cognitive processes, de-emphasising other aspects of being human. Other sociological/psychological theories used see humans as rational beings, a view which is not helpful when investigating the subjective experience of
knowledge sharing. Many of the studies draw conclusions or propose amendments to their research models, which imply that the findings can be universally applied. There are three problems with this. The first is that, although the studies present some evidence that significant correlations exist between the variables considered, causation is not established, and the suggestions and recommendations made in the studies referenced in this chapter merely confirm what was discovered in their literature review or are anodyne. The second is the difficulty of drawing universal conclusions from contextually situated studies. Although the literature considered was filtered for cultural aspects which were obviously local, such studies are in reality limited to suggesting that the research models can be validated for the particular situation being studied, whether it be the relationship between trust, self-efficacy and outcome expectations in knowledge sharing behaviour in virtual communities (Hsu et al., 2007) or the practices of electronics firms (Aziz et al., 2013). The third problem is, that by subjecting their respondents to research instruments that are controlled by the researcher (questionnaires, often using the Likert scale, structured interview, examination of logs), the studies are far from exploring or capturing the subjective views of the individuals involved in the sharing of knowledge or in managing this sharing. Thus, these studies, in adopting a functionalist and theory-driven approach to the question, are neglecting an important aspect, the capability of those involved to discuss and make sense of their own experience of knowledge sharing.

2.4 Summary

It has been possible to construct an ontological understanding of knowledge sharing from the literature, summarised in Figure 2.4 (p.22) in a unified model. Social psychology theories cited in the literature have been proposed as useful lenses through which the issues can be viewed. It is suggested that these theories take a rationalist view of human agency and that the quantitative studies into issues of knowledge sharing neglect subjective human experience and the context-specific influences on sharing. The usefulness of findings and the meaningfulness of the conclusions from using a quantitative approach to investigating human experience are questioned. In the following chapter, a case is made for research approaches which recognise this, and the literature in the interpretivist tradition is reviewed.
Chapter 3: Interpretivist approach to knowledge sharing

3.1 Introduction

“Philosophically, knowledge management is often approached from two diametrically opposed, and one integrative, perspective: (1) interpretive versus (2) functionalist and (3) the social-technical perspective” (Jelavic, 2011, p.2). In the previous chapter, an account was given of knowledge sharing in organizations, using literature from across a wide spectrum of disciplines. From this an ontological model of knowledge sharing was constructed (Figure 2.4, p.22), which summarised the influencing factors found in the literature, from the individual to the organizational level, and suggested relationships between them. The nature of the literature was commented on; it was noted that much of it took a functionalist view of knowledge sharing, using sociological and psychological theory to build models for quantitative testing, to establish general principles. In many cases, the hypotheses based on these models were found to be supported, establishing correlation between variables, but causation, and plausible explanation for the linkage was not always forthcoming. Some authors provided caveats about the generalizability of their studies, suggesting weaknesses due to single case studies, or studies carried out in particular contexts, but the general opinion was that it was worth replicating the studies in other areas to test claims for the models’ universal application.

3.1 Functionalist approach

Much of the literature reviewed in the previous chapter follows the functionalist approach to social reality proposed by Durkheim (1895, in Checkland, 1991). Durkheim’s view was that social facts are emergent properties of society as a whole, that they are external to and transcend individuals, and constrain behaviour. “Social facts” were reified by this approach, which suggested that they actually exist rather than being conceptual representations of reality. Durkheim held them to form universally applicable patterns, or social structures, for which causal and functional explanations could be sought (Checkland, 1991, p.266). This position has a background in positivist philosophy, which claims that all true knowledge is based on empirical data, and that we can create an ontology of facts which are based in the real world. The characteristics of knowledge gained by the positivist approach are that it is fixed, that the same outcome will be possible through repeated experiments, and that it is refutable. Karl Popper claimed that “social facts” could be collected in the same way as natural science facts, using a “model of a situation” and a rationality principle defining action rational in that situation (Ackermann, 1976). From this perspective, social and human concerns can be treated as though they are amenable to the same type of examination as for natural sciences.
The functionalist approach to investigating human activity is criticised for not recognising the complexity and “messiness” of human activity (Checkland, 1999, p. 115). Humans have self-consciousness and assign meaning to what they perceive and think about the world. Individuals will attribute different meanings to the same phenomena, depending on their perspective, and may change their minds about meaning over time. The decisions they make are not solely on a rational basis, but are influenced by their individual perspectives. So it is difficult to predict outcomes, or to reproduce action as for the natural sciences. When investigating social reality, the different meanings assigned, and the different perspectives held, however irrationally or impermanently, need to be taken into account. Subjectivity and inter-subjectivity should be considered.

3.2 Alternative approaches

In his discussion of epistemological considerations, Spender (2009, p.161) comments on the seeming avoidance of the issues around defining knowledge in the knowledge management literature, suggesting that a pragmatic view is most practicable, based not on the definition but on use made of knowledge. The alternative perspective on social reality, interpretivism, is more useful when thinking about the problems of human activity. Rather than the universally applicable laws emerging as manifestations of society, and controlling the behaviour of individuals, the emphasis is on deliberate individual action, access to the subjective meaning attributed by the individual to the action, and the effect this had on others. Social reality should be studied by determining the subjective meanings each individual associates with the action by placing oneself in the role of the observed individual. In doing this, the further layer of subjective understanding belonging to the observer should be recognised. “So an interpretivist approach [becomes] possible, the analysis of meaningful action, interpreted by the observer in terms of the means-ends scheme of rationality” (Checkland, 1991, p.267). From the interpretivist perspective, social reality is knowledge from particular points of view (Weber, 1897, in Morrison, 2006); universal laws relating to social settings, in Durkheim’s sense, are not ontologically real but are ways of thinking about reality.

If we accept that social reality is constructed of an interplay of purposeful individual action, to which differing meanings are attributed by the actors and the observers, that individuals may change their minds about meaning and that they will have differing perspectives on what the reality is (subjectivity), it is clear that the methodologies which are influenced by the positivist paradigm are not appropriate for investigating it. Methodologies that recognise and explore individuals’ perceptions of their world are likely to be more fruitful. Dilthey, an antecedent of Weber, initially proposed “Verstehen” as a method by which we understand the meaning of
words or action by “reliving the mental states of others, inferred by analogy and on the basis of a knowledge of our own experiences” (Blackburn, 2008, p.100). He developed the method further, to incorporate social and historical elements, in the study of the “objectifications” of human mind as culture. This method was used in a “hermeneutic cycle”, an iterative and interpretive exploration of social reality. Hermeneutics as practised in this context is the “interpretation of... the social, historical and psychological world” (Blackburn, 2008, p.165) so as to establish its meaning. Gadamer (2004, in Stowell & Welch, 2012, p.143) argued that “if what we observe is influenced by tradition, culture, physical characteristics and the like there can be no single explanation and no universally acceptable account [of social reality]”.

The subjective perspective of the individual is an important aspect of this view and is encapsulated in the term “Weltanschauung”, or World View. Defined as “a comprehensive conception or apprehension of the world especially from a specific standpoint” (Merriam-Webster Dictionary, 2012), it is also described as “the framework of ideas and beliefs through when an individual, group or culture interprets the world and interacts with it”. Dilthey suggested that it is composed of three elements: “our cognitive representation of the world, our evaluation of life, and our ideals concerning the conduct of life” (Checkland, 1991, p.276). The Weltanschauung concept has been used widely in the interpretivist tradition and research to represent the stance of individuals in a situation. It also applies to the perspective from which systems (ways of thinking about reality) are defined. In summary, the interpretivist tradition views social reality as constructed by individuals, who influence and are influenced by each other. Interpretivist traditions of research allow us to explore real world phenomena from this perspective (Checkland, 1991; Walsham, 1995).

3.3 Epistemologies

The epistemology of knowledge management has been examined by a number of authors (Schultze & Cox, 1998; McAdam & McCreedy, 1999; Alavi & Leidner, 2001; Earl, 2001; Kakabadse et al., 2003; Simard & Jourdeuil, 2010), and each epistemological approach can be associated with particular views of knowledge. For example, one of Alavi & Leidner’s (2001) perspectives on knowledge is the State of Mind, which emphasises knowing and understanding through experience and study. An interpretivist position on knowledge sharing implies an epistemological focus on the social practice of knowing (Brown & Duguid, 1998). The deepening internalization of knowledge sharing as knowledge management progressed, from sharing best practice to organizational learning and knowledge creation has been described by Koenig (2002) and Orlikowski (2002, p.253).
Schultze and Leidner (2002, p.218) categorise the discourses of knowledge management (Table 3.1):

**Table 3.1: Knowledge management discourses (Schultze & Leidner, 2002, p.218)**

<table>
<thead>
<tr>
<th>Normative</th>
<th>Technology solutions for knowledge management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpretive</td>
<td>Implementation and organizational implication of knowledge management initiatives</td>
</tr>
<tr>
<td>Critical</td>
<td>Social inequities in organization</td>
</tr>
<tr>
<td>Dialogic</td>
<td>Examination of contradictions.</td>
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</tbody>
</table>

These perspectives can be compared with the cognitive, connectionist and autopoietic epistemologies identified by Jelavic (2011) for studying knowledge management (von Krogh et al., 1994; Venzin et al., 1998; Marr et al., 2003, in Jelavic, 2011). In the cognitivist epistemology, knowledge is explicit, codifiable, interchangeable with information, transferable; the emphasis is on rules, IT and there are parallels with functionalism and with Shultze and Leidner’s normative discourse. As this thesis is concerned with knowledge-as-practice, involving tacit knowledge and practitioners’ subjective ideas, this cognitivist perspective is not pursued.

The connectionist and autopoietic epistemologies have more resonance with interpretivism. In the connectionist epistemology, Jelavic (2011, p.4) asserts that the focus is on flow of information (rather than knowledge) between self-managing groups, and that the rules governing knowledge are team-based; there are parallels with both functionalism and interpretivism. The autopoietic epistemology (Jelavic, 2011, p.5), concerned with self-maintaining systems, corresponds most closely to interpretivism, seeing knowledge as “socially-constructed, context-sensitive and dependent on history” (von Krogh et al., 1994, p.58), structured between tacit and explicit (Pan & Scarborough, 1999, p.362). The emphasis is on personalization of knowledge rather than codification, with knowledge being transferred through interpretive personalisation (Hansen et al., 1999, in Skok & Kalmanovitch, 2005, p.736). This also accords with Schultze and Cox’s (1998) description of the interpretive perspective – knowledge as dynamic and situated within social realities. In his view, social realities can be more thoroughly understood by investigating the meanings individuals attribute to their own and other’s actions.

Jelavic (2011, p.10) comments on an extra epistemological dimension (individual-organizational), and on how a socio-technical perspective integrates the different epistemologies in knowledge management. Here, managing knowledge engages both social/organizational culture, and the technical systems which facilitate it (Pan & Scarborough’s (1999, p.363) “infoculture”). There is a knowledge management and sharing literature which explores this perspective. Nonaka and von Krogh (2009) associate the technical and social aspects of knowledge management with explicit-
tacit transfer of knowledge. While accepting that this viewpoint has merits, the focus of the research is on the participants’ subjective experience of knowledge sharing practice. Assessing technological influences would be a distraction from this focus; ICT is ineffective without social, cultural, value and practice paradigm (Davenport & Prusak, 1998).

3.4 Interpretivism and an epistemological approach

Checkland (1981, 1999) considered how systems thinking could be applied to organizational research and management problems. Reviewing the contribution of systems engineering, he concluded that the “scientific”, positivist approach was not adequate to address these problems, for the following reasons. Firstly, as established above, there are problems with the idea of systems existing in the real world at all (an ontological perspective) rather than as ways of thinking about reality. Secondly, the systems engineering/analysis approach focuses on problem definition, defining objectives and finding means to fulfil them, which do not take account of the difficulty of defining problems in human settings, of the unnaturality of seeing human activity as primarily goal-seeking, and disregarding the social and political “soft” influences on the situation: “The belief that real-world problems can be formulated in this way is the distinguishing characteristic of all ‘hard’ systems thinking” (Checkland, 1999, p.138). Thirdly, enlarging on this, what Checkland classed as “human activity systems” (“human situation[s] in which people [are] attempting to take purposeful action which [is] meaningful for them” (Checkland, 1999, p.A7) are complex and messy – humans have many qualities besides rationality, and often do not act in predictable ways, amenable to the development of universal rules. Nevertheless, through the work of the Lancaster School, the extent to which systems ideas could be used for examining “ill-defined problems in social systems” (Checkland, 1999, p.150) was assessed. Through a series of studies they came to a number of realisations. Thinking about a “problem to be solved” in a situation, as for hard systems, was not as useful as identifying potential “conditions to be alleviated”. These were identifiable through subjective perception which could change through time. These could be conceptualised as human activity systems. It was important to be clear about the perspective from which the system was conceived, and to make a choice as to which system was most relevant for further examination. The logical consequences of changing the system could then be worked out, and compared with the real situation to suggest action. This epistemological and interpretivist perspective was expressed in Soft Systems Methodology, a set of “principles of method” (Checkland, 1999, p.161) to aid thinking about situations of interest. Emerging from the systems ideas, it is underpinned by the interpretivist ideas discussed earlier: the phenomenological stance, with its emphasis on the mental processes of observers, and ideas about Weltanschauung to relate to their subjectively determined positions.
3.5 **Knowledge sharing in the interpretivist literature**

It is possible to bring ideas described above together: that the positivist paradigm has limitations when investigating subjective human experience, that interpretivism allows rich realisations about the role of this experience in human activity systems, and that this can be explored using systems ideas. As knowledge sharing can be viewed as a human activity within an organizational setting, it is useful to consider it from an epistemological perspective, where we can think about what knowledge it is possible to have, taking context and individuals’ learning experiences into account.

In the literature search, terms were chosen to find work produced from the interpretivist perspective (Figure 2.2). Much of the literature found referenced interpretivism, or described it, or discussed it in theoretical terms, but there were few studies taking an interpretivist approach. A second search was conducted using more focused terms, to discover studies conducted using interpretivist methods. The strategy described in Chapter 2 was used, this time with the search terms set out in Table 3.2:

<table>
<thead>
<tr>
<th>Term</th>
<th>Plus</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Management</td>
<td>Interpretiv*</td>
<td>34</td>
</tr>
<tr>
<td>Knowledge Sharing</td>
<td>Ethnograph*</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Phenomenol*</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Grounded Theory</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Case study</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Action Research</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>SSM</td>
<td>38</td>
</tr>
</tbody>
</table>

The same narrative approach was taken to determining relevant sources. Some studies claiming to be interpretivist showed functionalist or critical influences on a closer reading. Most referred to the influential authors when discussing the nature of knowledge, but definitions of knowledge were not discussed in detail. Some qualitative studies, for example Bechky (2003), on ethnography in a production environment, show that a richer understanding is possible. The following section describes how interpretivist research approaches have been used to explore knowledge sharing. The contribution of ethnography, the description of a group’s culture, is discussed first. Phenomenological research, discovering the themes underlying the lived experience of those engaged in knowledge sharing, is reviewed next. The role of Grounded Theory in developing theory about knowledge sharing is considered. Finally, the contributions from action research are discussed.
3.5.1 Knowledge sharing and ethnographic studies

The qualitative methodology, ethnography, is concerned with discovery and interpretation of the “shared and learned patterns of values, behaviours, beliefs and language of a culture-sharing group” (Harris, in Creswell, 2007, p.68). In the context of this thesis, organizational culture is examined rather than national culture, and it is in this sense that the ethnographic approach is considered. Characterised by extended time in the field, data collection methods include observation and interview, and interpretation focuses on discovering themes relating to how the group works. Its use “implies...intimate personal knowledge of the subjects of the study, longitudinal rather than cross-sectional observation... sensitivity to the constructed nature of the research results” (Brivot, 2011, p.10) and, it has often been used where there is little theory or literature on the topic (Brivot, 2011). In the knowledge sharing literature, ethnography has been employed in socio-technical studies and investigations of collaborative working as a means determining what is actually going on (theory-in-use) rather than what subjects say is happening (espoused theory). For example, Huysman and Wulf (2005) use it to examine non-canonical (informal, outside organizational structures and mandates) knowledge sharing, testing assumptions that the sharing of tacit knowledge requires social networks (after Brown & Duguid, 2000). They view the workplace as an idiosyncratic group culture with distinct practice. Baird et al. (2000) investigated tacit social skills amongst design engineers at Rolls Royce. Erickson & Kellogg (2003) refer to ethnographic studies of workplaces revealing the social practice of knowledge sharing. Kogan & Muller (2006) used ethnographical methods to investigate collaborative knowledge work in a process–oriented environment.

Purely ethnographical studies of knowledge sharing are not common. A good example is that by Bechky (2003) into the communication of knowledge between technicians and designers in a production environment. She found that overcoming problems relating to differences of technical language and situatedness of groups was best achieved by establishing common ground (for example by common reference to a boundary object) and by aiming to transform understanding rather than to transfer knowledge. Other authors conduct studies “inspired by” ethnographic methods (Dingsoyr & Roeyrvik, 2003; Kogan & Muller, 2006; Ramsten & Saljo, 2012), where ethnographic techniques are used to support other means of data collection, and rarely appear to involve much time in the field. For example, Egbu & Botterill (2002) carried out “ethnographical interviews” to provide richer data to support questionnaires, and the drawing of a general conclusion. The data is often processed using Grounded Theory techniques, which rather than providing a pure ethnographic account of the group’s culture, is more focused on the creation of a theory from data.
The adoption of ethnography has difficulties for a study into knowledge sharing which aims to explore in depth subjective meanings amongst the participants. Firstly, an account of the group’s culture considers only the group unit of analysis; the individual perspective is de-emphasised except as it casts light on the group dynamics. Secondly, there is the problem of the imposition of an extra layer of interpretation by the researcher. For example, in a study of networks of practice and value sharing in a hospital (Tagliacenti & Mattarelli, 2006, p.300), the researchers decided to pay particular attention to “clusters” of interactions amongst the subjects, which applied to particular clinical pathways. While this assumption was reasonable, it was the researchers’ construct. Kogan and Muller (2006, p.761) would suggest checking this assumption with the participants, which reintroduce the problem that the study is then about espoused theory rather than theory in practice.

3.5.2 Knowledge sharing and phenomenological research

The purpose of phenomenological research is to arrive at a universal description, or “essence” of a real world object or phenomenon, by analysing the lived experience of individuals who have experienced it. As discussed earlier, consciousness is held always to be directed towards an object, and the reality of the object is linked to the individual’s consciousness of it. Two approaches of particular interest are hermeneutic phenomenology (van Manen, 1990) and transcendental phenomenology (Moustakas, 1994). In hermeneutic phenomenology, one is interpreting the “texts” of life (Creswell, 2007, p.59); an “abiding concern” is identified and research is directed at establishing its essential themes. The researcher mediates between different meanings, and so makes an interpretation of them (von Manen, 1009, p.26). In transcendental phenomenology, the focus is more on the participants’ experiences. To establish the essence of a phenomenon from individuals’ descriptions, the researcher’s common-sense judgements about what is real are suspended (“bracketed”), so that he can arrive at an unbiased perspective (von Manen points out that this would be difficult to achieve from a hermeneutic perspective). The combination of a textual description of the participants’ experience and a structural description of how they experienced it conveys the overall essence (Creswell, 2007, p.60).

This methodology has been used in a number of studies concerned with establishing themes either about interpersonal relations in knowledge sharing or about relationships with the technology (such as Knowledge Management Systems). Young and Tseng (2008) investigated online interpersonal trust formation, and Kupers (2008), learning in organizations. Meenan et al. (2010) examined the experience of using a wiki collaboration tool for knowledge sharing. Some studies employed a “phenomenology-influenced” methodology, or took it at face value; thus Bechina and Bommen (2007, p.109), in their investigation of social sense in knowledge sharing in
a Scandinavian consulting company, used the phenomenological approach because it was the “most appropriate approach for coping with the social complexity of management and business”.

Where phenomenological research was used in a more meaningful way, the findings were better grounded. Tsoukas (in Easterby-Smith & Lyles, 2011, p.453) critiques Nonaka and Takeuchi’s SECI model and proposes an alternative, where tacit knowledge is articulated (as far as possible) when a skilled practitioner is obstructed in his practice, and becomes aware of how he is accomplishing his task. White and Korrapati (2007) used hermeneutic phenomenological methods to discover knowledge sharing facilitators in a Human Resources community of practice; these included openness, personal construction of trust, and a preference for an oral tradition of storytelling which was difficult to replicate on-line. Attempts have also been made to use phenomenological research to address problems of over-reliance on the functionalist paradigm when designing Knowledge Management Systems; Butler and Murphy (2007), used it in mixed methods research to examine how social actors understand phenomena in the real world and share that knowledge using IT tools. The advantage of this approach lies in the close examination of the material for themes, a valuable exercise resulting in deep realisations. The problems for research where the subjective perceptions of the participants are important, is that these are specifically not privileged. Also, although the researcher is encouraged to bracket his own assumptions, to identify and set them aside, his is the sense-making apparatus which uncovers the themes. The possibility of researcher bias is a weakness of the approach.

3.5.3 Knowledge sharing and Grounded Theory

In Grounded Theory the intention is to move on from the rich description achieved by the methodologies such as ethnography, to discover a theory, grounded in the data obtained from the views of participants in social situations (Glaser & Strauss, in Creswell, 2007, p.63). The researcher selects participants who are best suited to help form the theory (theoretical sampling). By a cyclical process of in-depth open interviews in the field followed by analysis, the researcher formulates categories of information by coding the data. These are refined into a theory by a continual revisiting of coding (open coding to achieve the first level of abstraction, followed by axial coding to realise new connections between categories, and selective coding to focus on a core variable). Variants include constructivist Grounded Theory (Charmaz, 2006), which adopts the social constructivist perspective (learning about the multiplicities of world views, hidden networks and relationships, issues of power and communication), with a greater emphasis on the values and assumptions of the participants (Creswell, 2007, p.65). This approach accommodates the researcher’s viewpoint, allowing for its expression in viewpoints and decision making. The coding and analysis aspects of the method can be used in the data analysis stages of other qualitative methodologies, such as ethnography.
In knowledge sharing research, Grounded Theory has been used to develop theory from the ground where there is a lack of it in specific situations. Nobre et al. (2010) make a case for it as being an appropriate qualitative method for research into social situations such as organizational learning. It has been used to develop theories about the operation of communities of practice. Jeon et al. (2011, p.255) discover factors affecting attitudes to knowledge sharing and Su et al. (2012) discuss how the concept of the community of practice was objectified, formalized and incorporated into a knowledge management structure. Theories relating to the practice of knowledge sharing are developed both from an individual and a socio-technical perspective. Marsick (2009) finds the need for organizational support in informal knowledge sharing; Whyte and Classen (2001) show that the transmission of tacit knowledge in SMEs by story-telling depends on participants having a common “language”. Horwitz and Santillan (2012) discuss knowledge sharing in global virtual team collaboration and Paroutis and Al Saleh (2009) find motivations and barriers to knowledge sharing when using Web 2.0 technologies. An example of the use of constructivist Grounded Theory is Jennings’s (2011) investigation into factors contributing to knowledge sharing in research-based organizations; categories showed the importance of an individual sense of responsibility and values relating to knowledge sharing, and the degree to which it was affected by the individual’s role. Discussing the value of individuals’ emergent knowledge discovered through work experience, but not always documented, Jennings comments on the difficulties organizations have in capturing it.

The method’s strength is in the elicitation of participants’ views and the return to aspects until saturation is achieved. As with other interpretivist methodologies, researchers acknowledge that the theories derived from the specific data are not generalizable; the credibility of the findings is shown by the description of how the work was carried out. Adopting the Corbin and Strauss (1990) variant, the theory has specific, fairly functionalist, components. The position of the researcher can be problematic if his perspective is not explicitly acknowledged at the start, and there are some difficulties in determining whether the categories are adequate or sufficiently saturated by the data. Where the intention, however, is that participants make their own enquiry into issues of interest to them, Grounded Theory is not an appropriate methodology.

3.5.4 Knowledge sharing and the case study approach

The origins of the case study were developed to provide empirical explanations of phenomena (Yin, 1994). The term has come to be used to describe research carried out in one place, for Pan and Leidner’s (2003) study carried out in a research organization, and it is often used in mixed method research. A number of qualitative case studies have been undertaken in the field of knowledge management (Ardichvili et al., 2003; Hara et al., 2007; Zhang et al., 2012), which mostly focus on the organizational level. The criticism of a case study approach is the same as for
other qualitative methods discussed in this chapter; the researcher selects the case for its relevance to his/her research interest. Participants in the research are not actively involved in his choice, and their contributions may only be a part of the data collected.

3.5.5 Knowledge sharing and action research

Action research is an approach to research carried out in social settings, with the two goals of assisting problem solving by collaboration between practitioners, and expanding knowledge (Hult & Lennung, in Baskerville, 1999, p.7, Rapoport, 1970, in Susman & Evered, 1978, p. 587). Action research is cyclical, offering “a means of reflecting on the development of theory from the experience of doing, and the development of practice from a sound theoretical base” (Stowell & Welch, 2012, p.175). The advantage of the approach is in the active involvement of the participants, carrying out enquiry into issues of interest to them – they “own” the process, assisted by the researcher.

The direction of action research approaches has been categorised as interpretivist, functionalist or from the critical perspective (cf Stowell & Welch, 2012, p.135). Approaches in the interpretivist tradition, influenced by philosophical approaches such as phenomenology and hermeneutics, focus on problem appreciation. As an example, Checkland’s Soft Systems Methodology (SSM) falls into this category. Those which focus on problem solving have been identified as more functionalist (in the sense that human behaviour is determined by impersonal laws which can be discovered (Carr & Kemmis, 1986, p. 84), objective and possibly reductionist. An interpretivist approach allows for deep investigation. A functionalist approach’s focus is on identifying a problem and working towards a solution. In the critical approach, typified by Participatory Action Research, the interest is in empowering the participants to change their social or political situation.

Further explanation and justification of action research is given in Chapter Four; some examples are given here of investigations into knowledge sharing using this approach. Studies using “action research”, where the type is not mentioned, generally mean participatory action research. At an organizational level, Dawes et al. (2009) survey the action research programmes carried out in public sector knowledge networks and draw conclusions about the protean nature of knowledge and the variations in its ability to be shared. They also comment on the internal and external boundaries and barriers which affect it, and the characteristics of networking success. Peet (2012) tests a methodology for the transfer of tacit knowledge from retiring leaders, developed from action research which identified the learning experience students need to become leaders. Kimble et al. (2010) use it to examine the effect of local circumstances on how the interplay between boundary objects and brokers influences knowledge sharing. Studies using Soft Systems Methodology can show the same superficial treatment as for the other methodologies. Amongst
the examples which justify the approach and for which there is evidence that it has been appropriately used are studies in a wide range of fields, including, but not limited to, information systems research and innovation. Some of the more convincing studies are carried out in organizational settings with specific imperatives to share knowledge (healthcare, manufacturing, innovation): Fernie et al. (2003) use SSM’s modelling from different world views to examine the problem of transferring tacit knowledge in the construction industry, uniting interpretive researchers and project management and discovering the importance of context in practice.

Other authors reflect on the use of soft systems to model the social aspects of adopting knowledge management technology or frameworks. Skok and Kalmanovitch (2005) use the early stages of SSM to establish situations of interest for developing a tool to evaluate a knowledge management intranet and Biggam (2002) uses it to clarify soft issues around the design of websites. Venters and Wood (2007) investigated factors inhibiting the development of communities of practice, choosing SSM because of its interpretive approach, focus on the team and the ability to move between theory and practice. Venters (2010) conducted SSM studies to explore knowledge management issues and use of a knowledge management tool by the British Council. His justification for its use was the ability to penetrate deeper into designers’ intentions, the ability to assess the political impact, and the access management gave to situations which would usually be unavailable. The reflexive analysis which is part of the approach was also valued.

3.6 Conclusion

The relative paucity of interpretivist studies into knowledge sharing suggests that there is room for a further assessment of the factors influencing knowledge sharing, using an epistemological approach. The researcher was able to conduct a field study in an organization whose raison d’être was the effective exploitation of scientific and technical knowledge, and whose members were similarly interested in sharing this knowledge effectively.

The researcher’s initial interest was in the implications of viewing knowledge as knowing, practice, in-headedness (Spender, 1996; Koenig, 2002) for knowledge sharing, and the process by which tacit knowledge is shared between individuals (Polanyi & Prosch, 1975; Tsoukas, 2011) (p.7) The field study was developed together with participants who were similarly interested in enquiring into their knowledge sharing practice. When choosing a methodology for the field study, an ethnographic approach was discarded, as the study involved more than the description and exploration of a community. Although Huxham and Vangen (2003, p.383) view action research as a phenomenological methodological paradigm for carrying out research into management and organizations, a purely phenomenological approach was also discarded, as a description of the essence of the group’s lived experience discounted the knowledgeability and
reflexiveness possessed by the participants about their situation (Orlikowski, 2002, p.255). Equally, the various data collection methods commonly used in case study research do not privilege active participants. Theory emergent from data (participants’ views collected by interview) is a goal of Grounded Theory (Glaser and Strauss, 1967), but the study was not carried out for this reason. Action research acknowledges the contribution of action (practice of the participants) in action research (Huxham & Vangen, 2003, p.385).

An interpretivist, action research-based method was used for the following reasons: it allows for enquiry into the factors influencing knowledge sharing, and crucially, it permits the participants in the study to do this for themselves, to reflect on their perceptions of knowledge sharing, with minimal influence from the researcher. Thus the field study was situated in the participants’ context. Participants’ discoveries could not be predicted in advance, but as the researcher shared in the discovery process, it was possible to reflect on how these discoveries supported or discounted work already done on knowledge sharing. The researcher wanted to see whether it was possible to compare the participants’ realizations about their knowledge sharing practice with the issues and linkages expressed in the unified model (Figure 2.4, p.22), prepared from the literature reviewed in Chapter Two. Specific factors influencing intention to share knowledge such as self-efficacy, reciprocity and trust (Davenport & Prusak in Choo, 2003; White & Korrapati, 2007) could be explored, and self-efficacy in particular examined with respect to knowledge-as-action (Orlikowski, 2002). The outcomes from the study are compared with the areas of interest to the researcher, in Chapter Eight, and compared with some of the areas for further research identified by Wang and Noe (2010) (Figure 2.1).
Chapter 4: Methodological approach

4.1 Introduction
Arguments about the limitations of the positivist perspective for conducting research into human systems were set out in Chapter Two. The benefits of an epistemological over an ontological approach to investigating knowledge sharing were outlined in Chapter Three. Qualitative research into knowledge sharing was reviewed and a case was made for further investigation using action research. Conducting research into knowledge sharing in an organization allows us to consider action research methodologies appropriate to information systems and to learning organizations. In this chapter, some of these methodologies are visited. A case is made for an interpretivist rather than a functionalist or participatory approach: the research is an enquiry into a situation of interest rather than an investigation of a problem or issue. Insights and ideas from alternative approaches are considered, followed by a discussion of the Appreciative Inquiry Method (AIM), its position as enquiry-based action research and its appropriateness for the research. The claims to truth of an action research study are addressed via Checkland’s FMA model.

4.2 A framework for conducting research
Reflecting on how truth claims can be made for the outcomes of qualitative research, Checkland comments on social phenomena not being “homogeneous through time” (Checkland & Holwell, 1998, p.11), and on the problem of an action researcher maintaining an intellectual position when involved in “the flux of real-world social situations”. He suggests that the epistemological basis for the research, the methodology adopted and the area of interest should be declared in advance (Checkland & Holwell, 1998, p.14). Summarised as the FMA model (Figure 1.6), a framework of ideas (F) is established, indicating the research tradition in which the research is to be carried out and the epistemology of what counts as learning in the situation. This dictates options for the research methodology (M), which is chosen, justified, and applied to the area of interest (A). The process is iterative, where research findings can be used to shape further the framework of ideas (West and Stansfield (2001, p.253). Checkland’s reason for declaring the epistemology of learning in advance is to defend the research carried out against accusations that it is “anecdotal” (Checkland & Holwell, 1998, p.14). He acknowledges that action research occupies a middle ground between anecdote and validity (in the natural science sense), but is concerned to give the findings the best chance of being considered not just “plausible” (a weak claim), but through recoverability, to be warranted (Checkland & Holwell, 1998, p.138). The use of recoverability to authenticate action research is discussed (p.65). The FMA model gives the
research a structure that allows an interested observer to reflect on the quality of the action research experience.

**Figure 4.1: FMA Model (Stowell, 2009).**

![FMA Model Diagram](image)

**Source:** After Checkland and Scholes (1990)

### 4.3 Action research description and origins

Action research is an enquiry into social reality based upon a cycle of learning. Participants in an action research study are those who are involved in the situation of interest and a researcher. A situation is “problematised” (Rapoport, 1970, p.499): it is identified as being of interest to those participating in the study. The situation is examined by the participants, who develop their own ideas about how matters should proceed. Action is taken, based on these ideas, and the new situation can be investigated in a further cycle of learning; the whole constituting planning, action and fact finding (Lewin, 1948, p. 206) As the cycle progresses, the participants develop “ownership” of the process and learn about the situation and what they can do to change it. The researcher facilitates this process, and, reflecting on the participants’ contributions, learns both about the situation and the research method.

Susman and Evered’s original cycle of learning, developed in the context of organizational science, is shown in Figure 4.2, illustrating the continuous cycle of acting and learning.
Acknowledging the subjectivity of human experience means that the participants in an action research study are encouraged to explore their own perceptions and experience, brought to bear on a problem situation. The problem situation is examined not as something existing in itself, but by what the participants can know and express about it. Combining the individual perspective of the participant, and a way of thinking systemically about the situation leads to insights into actors’ “intuition, hunch, interpretation” (Susman & Evered, 1978, p.586), exploring the richness of their subjective reality.

The notion of action research was developed from two social psychology research programs in the mid to late 1940s (Baskerville, 1999, p. 7; Coughlan & Coghlan, 2002, p. 223). Kurt Lewin, at the University of Michigan Research Center for Group Dynamics, believed that social events could not be studied in a laboratory (Checkland, 1999, p. 152) and that enquiry into social problems should involve both researchers and practitioners. His model of action research proposed a cycle of surveillance of the problem and experimental action in the situation to improve it (Dickens & Watkins, 1999, p. 133).

Influenced by Lewin, action research was employed at the Tavistock Institute (Evered & Susman, 1978, p. 587). Clinical practice carried out with ex-prisoners of war (Pasmore, in Reason & Bradbury, 2001, p. 40) and in operational research in the post-war coal-mining industry (Trist and Bamford (1951), in Trist 1981, p. 8-10) showed how groups self-organised to solve problems and how the environment could affect their behaviour and motivation. In the latter study, the appreciation of the inter-relatedness of technology and the needs of individuals (Flood, 2010, p.
274) led to the development (Mumford, 1983) of the socio-technical approach, where systems benefited from joint optimisation between the social and the technical aspects. The ability of individuals to know about their task environments and to understand them in terms of “lawful relationships” with the system (Barton & Selsky, 1998) made it possible to develop the idea of a “shared social field of organizational action” (Flood & Mingers, 2006, p.118).

**Figure 4.3: Reflection in the action research cycle (after Coghlan & Brannick (2001), p.19; Cardno & Piggot-Irvine (1996), p.19)**

Figure 4.3, adapted from the action research cycle, shows the role of reflection by those involved, informing iterative learning cycles in an action research intervention.

Current thinking about action research is that it is an approach to research carried out in social situations, with the two goals of assisting practical problem solving by collaboration between participants, and expanding knowledge (Hult & Lennung, in Baskerville, 1999, p.7, Rapoport, 1970, in Susman & Evered, 1978, p. 587). From its origins in social science it now exists in various forms, involving different perspectives and practices. It has been diversified to apply to the fields of management, sociology, education, organizational learning and information systems. For instance, in the sociological domain it exists as Cooperative Inquiry (Reason, 2006) and
Participatory Action research (Whyte, 1991). Its use in organization research has been explored by Huxham & Vangen (2003, p.383), and in this domain action research methodologies include Action Science (Argyris et al., 1985) and Developmental Action Inquiry (Torbert, 2004). It has also been used as a methodology in information systems research (Avison & Wood-Harper, 2003, p.15; Baskerville & Wood-Harper, 1998, p. 92) notably in the form of Soft Systems Methodology (Checkland, 1981; Checkland & Scholes, 1990) which has been practised in the management domain and latterly in the information systems domain. Action research is also an important tool in emancipatory studies, where methods such as Participatory Action research are used.

4.4 Criticisms and defences of action research

Before discussing specific action research methodologies in more detail, criticisms of action research should be addressed. Authors from the various literatures (Rapoport (1970) in sociological research; Kock (2007) in organizational research; Checkland (1999), Avison & Wood-Harper (1991), Baskerville & Wood-Harper (1996) in information systems) have attempted to address the critiques of action research and propose solutions, which may be of relevance to the framework of ideas supporting this research.

A first criticism is from positivist science perspective, in which research outcomes must have rigour, validity and generalizability. The nature of action research, situated and localised, dealing with human subjects, reduces claims to objectivity (Baskerville & Wood-Harper, 1996) and is open to possibilities of bias (Avison & Wood-Harper, 2003). Cunningham (1993, p.25, in Dickens and Watkins, p. 133) also noted that with action research, “Two researchers attempting to solve the same problem could inevitably reach different conclusions and still meet the criteria of action research within some paradigm or another”. In response to this, Susman and Evered (1978, p. 599) had already questioned using the criteria of positivist science for evaluating action research. They suggested that as action research is concerned with development of interpersonal and problem-defining skills in the participants of the research, the quality should be judged by reference to philosophical traditions which privilege this interpersonal perspective (such as interpretivism, phenomenology). Further, claims of positivist science to be truly objective have been critically examined by Polanyi (2009) and Deetz (1996, p.193); the researcher chooses what facts to pay attention to, and the influences on this decision are not made explicit.

The need to scrutinise the quality of an action research exercise nevertheless exists. For example, Checkland and Holwell (1998, p.18) proposed the notion of recoverability, where the intellectual frameworks and methodology arising from them are defined before the research begins so that the process of arriving at the situated knowledge can be reconstructed from the documentation produced. In this way, a disinterested reviewer could be assured of the intellectual integrity and
completeness of the study. Checkland’s FMA model has been described in para. 4.2. Champion and Stowell (2003, p.27) further suggest that validity can be judged in terms of the research’s authenticity. Authenticity in this context is defined in the existentialist sense of being true to oneself in dealing with to external events/material world, and therefore being worthy of belief (Burchfield, 1888, in Champion & Stowell, 2003, p.27). Participants or stakeholders in the research can accept the enquiry as authentic if they believe it has been undertaken as a “genuine attempt at learning about the situation”. An intellectual device to guide researchers and provide this assurance was deployed by Champion (the PEArL framework, discussed in pages 65 and 66). A further defence of the subjective in research is given by Grandon Gill (2009, p.239) in his views on the importance of relevance and resonance, the latter being defined as “the ability of the research message to move through available channels to the client and, subsequently, to impact that client’s mental models”.

Kock (2007, pp.100-102) describes the three threats of action research in organizations as being uncontrollability, contingency and subjectivity. As solutions, he proposes multiple iterations of the action research cycle (not necessarily in the same organization as he is focusing on the researcher’s growing understanding of ideas of interest to himself) and that the unit of analysis is identified early, to provide consistency between cycles. He appears to take a pragmatist view, seeing action research as a tool for research rather than an epistemological approach to the study of situations of interest in organizations (Stowell, 2013, p.16).

A second criticism is that the methodology results in research with little action or action with little research (Foster, 1972, in Dickens & Watkins, 1999, p.131). It was also identified in Rapoport’s views on goal and initiative dilemmas (1970). The criticism of action research being mere consultancy is partly addressed by Baskerville (1999, p. 12) on the basis of differences in motivation, commitment to different stakeholders, approach, foundation for recommendations and basis for understanding. Action research used non-instrumentally, e.g. to help participants to enquire into a situation of interest to them, makes use of the researcher as a facilitator rather than a consultant. From within the organizational learning domain, Huxham and Vangen (2003, p.384) acknowledge that action research combines both intervention to improve practice and the generation of theoretical knowledge, and position themselves towards the latter. They apply Checkland and Holwell’s (1998, p.18) idea of recoverability of the research to other areas and compare it to Yin’s (1994) argument “for the output of research from single case studies to become a theoretical vehicle for the examination of other cases” (Huxham & Vangen, 2003, p. 384). In this way they appear to be extending the concept of recoverability beyond its original intention.
A third criticism relates to outcomes; to the limited ability of action research to contribute to the body of knowledge (Marris and Rein, in Cohen and Manion, 1980). “Whether or not action research must contribute to knowledge in the same manner as other forms of social science research and whether or not action research must end in a resolution of a problem in order to be valid” (Watkins and Brooks, 1994, in Dickens and Watkins, 1999, p.131). This is put down partly to the characteristics of the research itself (situated, local, possibly participatory) and partly to the ability of the researcher and participants to do it well. Criteria are proposed to improve the quality of action research: including use of an interpretive frame, participatory observation, researcher action intervening in the research setting and study of changes in the setting (Baskerville and Wood-Harper (1998, p. 103). Reason & Bradbury (2001, in Coughlan & Coghlan, 2002, p.226) add cooperation between researcher and participants, iterative reflection as part of the process and whether sustainable change comes out of the project.

In the context of information systems action research, Baskerville and Wood-Harper (1998, p.103) take the functionalist position that for internal validity, the immediate problem addressed by the research must have been resolved. On the other hand, Dickens and Watkins discuss action research studies changing focus due to the realisations and discoveries of the practitioners (1999, p. 131); this can be expected or even desired as a consequence of the cycle of learning. A criticism relating to the conduct of the action research is that the researcher can have undue influence on the outcome, by the act of participating (Huxham & Vangen, 2003, p.398). The ethics of the interaction, the responsibility for the outcomes and the role of the researcher in this “overt intervention” are to be considered as part of good research design. Mindful consideration of these possibilities and problems is also encouraged in methods such as AIM (p.58).

4.5 Action research directions

The value of using action research in investigations that actively involve participants was advocated in the previous section, and some criticisms of the methodology have been addressed. There are several action research approaches, used in different knowledge domains, and rooted in specific perspectives. Action research approaches in this domain include Soft Systems Methodology, ETHICS, Multiview and Action Science. In organizational learning, the goals are to bring about transformation in practice and advances in knowledge, in a managerial or organizational setting (Huxham & Vangen, 2003, p.384). Representative action research approaches include action learning, action inquiry and also action science. Action research in the sociological tradition is concerned with empowerment, participation or learning – Huxham and Vangen (2003, p.385) do not see these as important a priori in the context of organizational learning, but as they are relevant to the research or action agenda. In viewing the purpose of
action research, they suggest that the goals of bringing about practical transformation or advancing knowledge lie on a spectrum, the relative importance of each depending on the research agenda (Huxham & Vangen, 2003, p. 384). This is helpful when determining the difference between a functionalist approach in action research, and one which emphasises appreciation in a situation of interest.

The next task is to select a method most appropriate to this research. When describing approaches to investigating complex problems, Burrell and Morgan’s classification of organizational theory (Burrell & Morgan, 1979, pp.28-30) has been referenced by many authors, despite critiques such as Deetz (1996, p.191), who argues that it is too readily interpreted as a reification of concepts rather than providing a way of distinguishing between research approaches. Attempting this classification of action research approaches, their distinction between interpretivism and functionalism has been adopted (Stowell & Welch, 2012, p.135). Approaches in the interpretivist tradition, influenced by philosophical approaches such as phenomenology and hermeneutics, focus on the possibility of in-depth enquiry and appreciation of situations of interest, privileging participants’ subjectivity. Those that focus on problem solving and working towards a solution have been identified as more functionalist (in the sense that human behaviour is determined by impersonal laws which can be discovered (Carr & Kemmis, 1986, p. 84)). As the research aims to develop appreciation of the issues of knowledge sharing in organizations, the most likely candidates are interpretivist action research approaches from the knowledge domains of information systems and organizational learning. Other traditions of action research are also examined, for the insights they may bring to the research process. A brief discussion of these action research approaches will help set the context for the choice made for the thesis. The contribution of what Flood & Mingers (2006, p. 117) call the eco-sociological perspective (typified by the work of Mumford) is apparent in all action research, but methodologies vary in their goals and practice. The purposes for which they are used, and the contributions which can be drawn from them, are discussed.

The view of action research primarily leading to purposeful action (Baskerville & Wood-Harper, 1998) is complemented by the view of action research leading to appreciation of a situation of interest. Rather than seeing participants as the “subjects of the research” (Baskerville, 1999, p.6), the situation-appreciation approach acknowledges that they are the experts in the environment, whose views and values need to be appreciated and accommodated when determining possible action. As this research is an investigation into knowledge sharing, it is appropriate to choose an action research methodology whose emphasis is problem appreciation rather than purposeful action. For this, an interpretivist approach is suggested.
There are certain qualitative research methods and techniques that are present to a greater or lesser degree in all action research methodologies. Different emphasis is placed on them in the various methodologies, arising from the underlying philosophical perspective, the use to which the method or technique is put and the nuance of meaning taken from the results. This means that certain action research methodologies were not applicable to this research and to avoid epistemological confusion, one action research method, AIM, as explicated by Stowell (2013) was selected. Some insights from the other methodologies appeared to be relevant to investigations in the area of interest, however, and these are included: “good action researchers will appreciate and draw on the range of perspectives and approaches that are available to them” (Reason & Bradbury, 2006, p. xxiii). These insights, and the rationale for using them, are described later in the chapter. Flood, in his work on Total Systems Intervention (Flood, 1990), derived from critical systems thinking, recommends theoretical and methodological complementarity, allowing for a holistic view to be developed. The dangers of “multiperspectivalism” are pointed out by Deetz (1996, p. 204), leading to shallow readings of the situation and underexamined basic assumptions, and therefore the possibility that one particular perspective is unconsciously privileged. But when selected for congruence with an interpretivist perspective, these insights can inform the research practice. For Reason and Bradbury (2006, p. xxiii), writing in the sociological tradition, “a key dimension of quality is to be aware of the choices ... and to make those choices clear, transparent, articulate”, moving away from validity as policing toward “incitement to dialogue”.

4.5.1 Action research in information systems

The insights from the originators of the concept of action research were applied in the field of information systems. Enid Mumford (Mumford & Weir, 1979, in Baskerville, 1999, p.8) used the Tavistock Institute’s socio-technical approach in developing ETHICS. Other contributions to action research in information systems include Checkland’s (1981) Soft Systems Methodology (SSM). Avison and Wood-Harper (1990) developed Multiview as a research methodology for information systems development, taking into account human, technological and organisational perspectives. AIM, discussed at greater length on page 58 et foll., was developed by Stowell and West (1994), drawing on the ideas of Vickers and Checkland. Insights relevant to the research from action research carried out in Information Systems are given below.

Action research in information systems employs systems thinking – seeing a situation holistically, thinking about it in systems terms. Concepts of interest include those of boundary, hierarchy, control and emergent properties. It has been described as: an iterative group process, undertaken by practitioners situated in context, leading to action or change in the environment under study (Dickens & Watkins, 1999, p. 131-132). This view is supported in the organizational learning literature (Argyris et al., 1985; Huber, 1991). It is carried out in complex social settings.
(where the certainties and limitations of a positivist approach are not appropriate, where the knowledge generated is context-specific (Baskerville, 1999, p. 6-7; Coughlan & Coghlan, 2002, p. 222). The research is carried out by participative action, performed collaboratively, enhancing the competences of the actors to learn how to enquire and how to improve the situation (Baskerville, 1999, p. 9; Coughlan & Coghlan, 2002, p. 222). For these reasons, action research in information systems has been mostly situated in an interpretive philosophical framework (Susman & Evered, 1978, p. 600; Baskerville, 1999, p. 4). Action research in information systems settings has lessons about the value of systems thinking in the situation of interest.

4.5.2 Action research in emancipatory settings

Action research in the field of sociology and emancipatory studies is described here, as some of its ideas have been adopted in organizational learning settings (p.56). Many of the underpinning philosophical ideas for this category of action research lie in Critical Theory, concerned with critically examining society, with the aim of changing it, socially and politically, giving voice to those who are without power. A key grouping of action research methodologies in this paradigm is Participatory Action Research (PAR): “a process through which members of an oppressed group or community identify a problem, collect and analyse information, and act upon the problem in order to find solutions and to promote social and political transformation.” (Selener, in Reason & Bradbury, 2006, p.2).

Defining concepts for this approach are that the social sphere is value-laden and can change, that knowledge is a social construction whose purpose is to emancipate, and that conducting research with participants democratises it. Ideas about our interpreted experience of the world and the role of language in constructing our “world” lead to the realization that there is no accessible reality beyond how we express our understanding (Reason & Bradbury, 2006, p.5). (Habermas, in his theory of communicative action (1986), comments on how relationships are made up of communicative exchanges between speakers who have subjective experiences). This expression, and what we know, is mediated, or hindered, by power relations, and there are several authors (Gaventa & Cornwall, 2006, p. 73) who write about the role of power.

There are various criticisms of PAR: its instrumental nature (in the sense that there is an outcome in mind) means that there is the danger that the tacit and the unconscious are neglected in favour of that which can be expressed in language. There is the possibility that the views of powerful stakeholders can skew the research and militate against a truly democratic outcome. PAR has also been criticised for being weak in developing theory, or in enabling scalability of solutions (Chevalier & Buckles, 2013).
There are however ideas that are examined particularly in PAR and which can inform practice in other types of action research. These include the importance of inter-subjectivity, expressed through language and the examination of the power relations in the situation. The question of commodities of power is explored by Stowell (2000), Checkland (1999) and Checkland and Poulter (2006), and informs interpretivist action research approaches such as the Appreciative Inquiry Method.

4.5.3 Action research in organizational learning

Action research in the field of organizational learning (Argyris et al., 1985; Huber, 1991; Huxham & Vangen, 2003) has focused on business and management education. Lau (1997) categorized action research focused on organizational learning, and included action science (Argyris et al., 1985), developmental action inquiry (Torbert, 2004) and action learning (Revans, 1980). These methodologies share the concept that, as practised by organization and management practitioners, “knowledge is produced in service or, and in the midst of, action” (Brooks & Watkins, 1994); contributions relevant to this research can be identified.

Action Learning, an umbrella term for a number of action-based learning approaches in management education (Pedler et al., 2005, p.64-5), encourages consideration of the roles of emotions and politics in learning and is influenced by pragmatic philosophy (Dewey, in Thorpe & Holt, 2008, p.15): what is possible at the moment, in the development of “insightful questions” for practitioners. Wilmott (in Thorpe & Holt, 2008, p.15) suggests that the insights of Critical Theory are needed if learning is not merely to reinforce the status quo or suit local agendas. Of more interest is the concept of “praxeology”, a general theory of human action encompassing the practitioner, other practitioners and the external world. Learning takes place at different levels of analysis: what the researcher learned about their own practice, what has been learned about the practice that is useful to other practitioners, and what has been learned in the wider network of stakeholders (Coghlan & Pedler, 2006, p.127).

In Action Inquiry (Torbert, 2004) action-centred learning ideas are applied to increase the effectiveness of teams and leaders in organization, through self-transformation and increased self-awareness, promoted by learning with “intentional awareness”. The approach makes use of the phenomenological concept of intersubjectivity: the idea that people construct shared meanings necessary for interactions which each other and that they learn to view themselves and the objective world in relation to the views of others. Torbert’s (2006) views on how traditional unilateral sources of power in organizations can be engaged in the services of self-transformation and mutuality (and hence the ability to improve the situation) draw on Critical Theory, in particular Habermas’s theory of communicative action (Habermas, 1986). The ideas of negotiating shared meaning, and recognising and using power relationships to transform situations can be
compared with some of the influences on interpretivist methodologies, including the work on Appreciation by Vickers (1965).

In Action Science (Argyris, 2004), practitioners consider how their behaviours influence the social settings in which they participate. It uses the concepts of “espoused theories of action”, how practitioners believe they behave, and “theories-in-use”, which can be inferred from observing what they do (Argyris & Schon, 1996). An aim of Action Science is to help practitioners move to a more reflective learning style (double-loop learning), becoming aware of the mental models underlying their behaviours (Senge, in Thorpe & Holt, 2008, p.19) and using this awareness to change the situation. Although it is not widely used, because of the complexity of the skills needed in the researcher, the need to internalise new values and lack of clarity about its purpose (Raelin, 2000), a claim made by Argyris (2004) is that Action Science shares features with objectivist science: “responsibility to the evidence, openness to argument, commitment to publication, loyalty to logic, and an admission... that one may turn out to be wrong” (Scheffler, 1982, p.138). These features can be found in the practice of interpretivist research: the subject matter is the subjective, but the analysis can be well-founded. To explain this further, the concepts of recoverability and authenticity are discussed in a later section.

4.5.4 Contributions from action research approaches

To summarise contributions of action research approaches: Participatory Action Research promotes the importance of power relations, intersubjectivity and exploring tacit norms and values. From organizational learning, the importance of context and the organizational perspective means taking into account different levels and interactions to be considered in the Appreciative setting. Significant contributions also include the influence of behaviours, reflective learning (double loop learning) and exposure of unconsciously held beliefs and norms. From action research in information systems, the contribution is of systems thinking which has informed the interpretivist tradition in action research methods, explored in the following section. Privileging the participant is a sine qua non of all action research, and underpins all research design using action research methodology. The research can be informed by these contributions, but in the following section we propose that, using AIM, we are adopting a participant-led approach which allows exploration of their true concerns.

4.6 Choice of action research methodology

4.6.1 A case for Appreciative Inquiry Method

The importance of language and meaning is asserted in all action research approaches, being the way that we construct our shared understanding of the world. The preceding ideas and
developments in the interpretivist tradition, Soft Systems Methodology and the concept of Appreciation are described, so that the decision to adopt AIM can be understood.

To understand the epistemological background of AIM, it is necessary to look at Soft Systems Methodology (SSM). SSM (Checkland 1981) was developed as a response to the inadequacies of system engineering to address problems in human activity systems in business and management. Following Churchman (1971) in using systemic thinking, it adopts an epistemological approach. Rather than viewing the problem situation as a set of systems, the process of enquiry itself is considered to be a system (Checkland, 1999, p. A49). The use of the “inquiring systems” concept (Churchman, 1971) allows participants to identify either primary tasks or issues in the problem situation and to conceive them as systems of purposeful activity (“holons”). Root definitions used to express the core purpose of “holons” as input-output transformations. The CATWOE mnemonic was devised to help formulate them (Checkland & Scholes, 1990, p.35):

- **C** ‘customers’ The victims or beneficiaries of T
- **A** ‘actors’ Those who would do T
- **T** ‘transformation process’ The conversion of input to output
- **W** ‘Weltanschauung’ The worldview which makes this T meaningful in context
- **O** ‘owner(s)’ Those who could stop T
- **E** ‘environmental constraints’ Elements outside the system which it takes as given

The methodology enables participants to develop conceptual models, being models of the activities needed to fulfil the root definitions, and therefore possible actions to improve the situation. These conceptual models are compared with the problem situation to determine feasible action, in a continuing cycle of learning (Figure 4.4). Comparison between models of the situation and perceived real situations require accommodations between conflicting perspectives, and that cultural feasibility is considered (Checkland, 1999, p.181). Models of human activity are always based on actors’ different perceptions, so the world view from which a situation is seen to be problematic is important.

Through use and development over a 30 year programme of action research, SSM evolved from a “Mode 1” practice, in which practitioners followed the seven stage model closely, into an internalised and situation-driven practice (“Mode 2”) (Checkland, 1999, p.A36). This was conceived as “a systemic learning process which articulates the working of an appreciative system in the Vickers’ sense” (Champion & Stowell, 2001, p. 12).
In his 30-year retrospective on SSM, Checkland (1999) recognised the congruence of SSM with the ideas of Vickers on the Appreciative Cycle: “the activity of attaching meaning to communication or the code by which we do so, a code which is constantly confirmed, developed or changed by use” (Vickers, 1965, p.30). “Appreciating” (with a capitalised A) means that an individual perceives that part of reality that speaks to his norms and values (“readiness to notice”) and makes “reality judgements” about perceived facts relevant to a situation of interest. The norms and values he holds have developed from his subjective experience, his appreciation of others’ experience (inter-subjectivity) and his history in the situation; Vickers refers to this as the individual’s “appreciative setting” (Stowell, 2013, p.17). (Ideas about the possibility of a fusion of horizons between participants can also be found in Churchman’s (1971) views on negotiation of boundaries and the necessary consideration of the participants’ Weltanschauungen). Once a reality judgement has been made, an individual considers a possible ideal state (what “ought” to be the case) and comes to a “value judgement”, which may inform action. Appreciation is shared with others in the situation, and action feasible in that situation is proposed. As a result of any consequent change, an individual’s appreciative setting is “open to new inputs from the flux of ideas and events” (Checkland, 1999, p. A48). Vickers’s view of individual and organizational behaviour was that they should be relationship-maintaining rather than goal seeking, which has allowed other authors to consider the social, political and cultural in determining what is feasible (Figure 4.5). Similar ideas are found in the writings of Argyris (1985, 2004) on Action Science and Deetz (1996) in assessing organizational theory, and Checkland and Casar (1986) talk in terms of participants’ reality judgements and value judgements, based on standards of fact and value.
The concept of the Appreciative Cycle supports SSM as a methodology for exploring “messy problem situations that lack a formal problem definition” (Checkland, 2000, p.11), moving in a cycle where participants are encouraged to determine which areas in the problem domain should be addressed, to conceptualise them as systems from which possible solutions can be modelled, to determine what changes are applicable in the real world and to apply them. There are situations, however, where the focus is not exploring what action is possible in a problem situation (whether primary task or issue based), but on making sense, or gaining understanding. The Appreciative Inquiry Method (AIM) has been developed with these situations in mind. Originally used to elicit subjective knowledge from experts (West, 1992, p.3), AIM has evolved into a methodological approach specifically focusing on enquiry into complex issues in information and business system problems, by entering into an Appreciative cycle, located around an agreed question.

Making use of the ideas from Vickers’s work and SSM, it is concerned with developing participants’ shared Appreciation, or understanding (Stowell, 2013, p.29). AIM draws on Vickers’s concept of Appreciation (Vickers, 1965), discovering the “shifting perceptions, judgements and structures of the world of culture” which influence “how human beings and groups deliberate and act”. It involves cycles of enquiry that help participants arrive at a shared appreciation of the situation as it “is” (reality judgement) and as it “ought to be” (value judgement) and to consider the feasibility of actions to improve it, according to organisational norms and values. Agreement on action is not a necessary part of the method, but learning about the limits to achieving it, and the participants’ power to influence it, is. The participants develop a shared Appreciation of the situation, acknowledging their different and possibly conflicting perspectives. The differences of opinion, the perplexities in understanding, when discussed, help to increase the participants’
collective understanding of the issues; the intellectual debate moves the learning forward (Champion & Stowell, 2003, p.32). The importance, and potential difficulties caused by power relationships is acknowledged, and thus the cultural and political feasibility of action becomes part of the conversation. In practice, AIM provides insight into participants' assumptions and perceptions, and a framework within which accommodations of different views can be reached and standards and norms in the situation modified.

AIM is at the knowledge exploration end of the action research spectrum (Huxham and Vangen (2003, p.384) and is claimed to help participants give up “tacit” or subjective aspects of knowledge, more appropriate to addressing complex problems than rationalist approaches that attempt to elicit rules, and are limited by this (Stowell & West, 1994). This is in contrast to the tendentious way in which sociological theories have been used in quantitative research into knowledge sharing (p.26 et foll.). Participants are helped to think about their often hard to describe situations, taking into account “difficult to measure” aspects of human behaviour and action”. They explore the shape of their knowledge, according to their language, using connections that make sense to them (Stowell, 2013, p.16).

An important aspect of AIM is that participants are encouraged to share their ideas in a transparent way, without introducing methodological bias (the method is “agnostic to the enquiry” (Checkland, 1985)). The perspective of the participants is paramount, and the researcher must be aware of the potentially distorting influence of her involvement in the situation. To address this, AIM is designed to be non-intrusive; participants are encouraged to give up their thinking on the situation of interest in an unrestrained way (Stowell, 2013, p.18), to allow a true representation of it as far as possible. The participants remain in control of the process, in a safe setting, and enter a cycle of learning. The researcher, not having experience of the situation, nor influencing it through practice of the method, develops understanding of it from within (“Verstehen”, Weber, in Stowell, 2013), as a benign non-active participant, not “getting in the way”. Reflection on the participants’ understanding is carried out through the lens of Vickers’s “Appreciative System”: their readinesses to notice aspects of the situation, influenced by their mutually related judgements of reality and value. As the participants will each have their views about the situation, it is claimed that AIM helps to help them gain an appreciation of these views, and how they can be accommodated in addressing the issue, to “optimise the realization of many conflicting relations” (Stowell and West, 1994, p.117). Stowell and Welch (2012, p.111) follow Churchman (1971) in commenting that agreement on action is only possible if the participants’ worldviews are coincident or if there is sufficient resonance between them; agreement on action is not a necessary part of the method, but the learning about the limits to achieving it, and the role of participants’ power to influence the accommodation is.
Another source of bias could be the exercise of the method itself (qualitative methods exist where the researcher must decide what to pay attention to, or where there is already an underlying theoretical framework or potential solution). Stowell (2013, p.16) makes claims for the method’s neutrality, using Churchman’s (1971, p.249) comments on anti-teleology to imply that it is a Hegelian self-enquiring system, that the result is not predicated by the method. This claim presumably relates to the double-loop learning aspect of any action research methodology; the process of change itself becomes the subject of research (Checkland, 1999, p.152).

4.6.2 Development of AIM

The method thus accommodates such diverse and potentially conflicting aspects as: non-intrusion by the researcher or the method; agnostic enquiry into the situation on the part of the researcher; finding a way of accommodating participants’ potentially conflicting views on the situation of interest, or power relations within it; a recoverable and authentic contribution to research, as well as action (particularly apposite in an enquiring method, where purposeful action is not a main outcome).

Originally, AIM was developed for the elicitation of subjective knowledge (Stowell & West, 1994; West & Thomas, 2005), to help an “expert” to give up knowledge with as little interference from the enquirer or the elicitation method as possible, to make it possible to for the enquirer to appreciate the participant’s Appreciative System. The method has evolved into a tool for sense-making, for where there is insufficient time or participant availability for a full SSM study (Smith, 2001; Stowell & West, in Stowell et al., 1995, p.140) or understanding complex management problems (Stowell & Welch, 2012, p.49). Deployed in systems workshop within the Systems Practice for Managing Complexity network since 2001 (Stowell & Welch, 2012, p.49), AIM has also been used in a study into IS teaching (involving seven companies) for the Higher Education Authority (Stowell & Probert, 2013). AIM is an actively used research method, which has evolved to include the concepts of authentication, identification of power dimensions, and the PEArL framework which aided reflection on these (Champion & Stowell, 2001, 2003; Cooray, 2010). Part of the current research is to explore its value for investigating knowledge sharing and to make a further contribution to its development.

In its current formulation, AIM is an enquiring system, a way of coming to a deep appreciation of a situation of interest, shared between participants. It recognises the process by which standards and norms in the situation are developed and modified. It uses a subset of the SSM methods, and is equally a learning process, but the emphasis in AIM is on improving understanding and thinking about the problem, of sense-making (Stowell & Welch, 2012, p.52). A claim made for the early iterations of AIM was its low requirement for participants’ time. Subsequent developments show that time requirements are greater than first thought, but have also shown that it can be
conducted in a series of short interactions, and to be of value where participants are likely to be constrained in the time they have available for the enquiry. In employing AIM, the practitioner acts to facilitate rather than control the process and concentrates on the ideas and interactions of the participants, and their ability to represent their thoughts. Using AIM as a method of action research, the practitioner facilitates, and together with the participants makes sense of and reflects back their contributions.

AIM is different from the Appreciative Inquiry model, proposed and used by Cooperrider and Whitney (2005), which is a strengths-based organizational analysis system, focusing on what an organisation does well, to improve performance. For them, appreciation is in the sense of appreciating and building on the most positive aspects of a situation, rather than the perception and judging of reality, as proposed by Vickers.

4.6.3 Demonstrating the quality of an AIM study

Considerations of bias-avoidance and method-neutrality introduce the question of how findings from this AIM can be thought to be sound. The concepts of validity and generalization are not available in qualitative research; the findings cannot be replicated in different groups of participants since the context of the study will be different, or even in the same group as their Appreciation will have been affected by the previous cycle of enquiry (part of Vickers’s flux of ideas and events). In action research it is not possible to predict the outcome of the study; the researcher will deal “not in hypothesis but in research themes within which lessons can be sought” from “social practice in a real world situation” (Checkland & Holwell, 1998, p.14). The outcome from the researcher immersing herself in the situation is the learning process itself. Nevertheless, credibility (ability to believed) is a measure of the quality of an action research study. Establishing this allows to those not involved in, but interested in the situation to assess the importance and relevance of what was learned in the study (Champion & Stowell, 2003, p.25). The problem for interpretivist methods was addressed by Checkland and Holwell in their notion of recoverability (Checkland & Holwell, 1998), and by Champion and Stowell’s work on authenticity through the PEArL (Champion & Stowell, 2003).

4.6.3.1 Recoverability

The notion of recoverability can be summarised thus. As discussed in the description of the FMA model (Checkland, 1985) (p.47) for action research findings to be considered more than merely anecdotal, certain elements should be declared in advance: the epistemological framework, the intended research method, and the aims of the enquiry (Checkland & Holwell, 1998, p.14). They commented that research should be conducted using a “declared-in-advance methodology” (encompassing a particular framework of ideas) “in such a way that the process is recoverable by
anyone interested in subjecting the research to critical scrutiny... to give action research a truth claim stronger than mere plausibility” (Checkland & Holwell, 1998, p.20). For an interested individual, however, knowing the epistemological background, the methodology and the enquiry aims are only part of the recoverability process. A study’s credibility is strengthened if the process documentation is available (Checkland & Holwell, 1998., p.17) and in AIM, system maps play this role. The manner in which the enquiry is carried out, however, is equally important; “individuals involved in and implicated by any intervention into organizational settings are more likely to accept the learning outcomes of enquiry as being useful and relevant to their situation if they can judge the enquiry to have been an authentic, or genuine, attempt at learning about the situation” (Champion & Stowell, 2003, p.27).

4.6.3.2 Authenticity and the PEArL framework

For an action research enquiry process to be considered authentic (“worthy of belief”), Champion and Stowell (2001, p.7) argued that aspects should be open to public scrutiny, so that concerned individuals could reflect on its applicability to the situation of interest and its acceptability. The PEArL framework was formulated as a methodological tool, rooted in systems ideas, to support claims to authenticity. PEArL is a mnemonic whose original use was to enable this reflection on the authenticity of the research, with respect to Participants, their Engagement, the Authority and relationships in the research exercise and the Learning experienced (the constituent parts making up the framework are shown in Table 4.1.). Champion and Stowell (2003, p.28) were at pains to state that PEArL is not a guide to action in the enquiry. This must remain agnostic (Checkland, 1985), as the outcome of the enquiry cannot be predicted. However, later studies have shown that it can be used at the start of a study, to consider boundary and participants, throughout the project as a means of understanding who the project is unfolding as well as the means of assessing and explaining the outcome. Cooray (2010) used PEArL in the process of enquiry to help participants examine their ideas about current reality and what ought to be done. The process documentation, in the form of system maps, definitions and models, supports recoverability of the findings, and claims to authenticity are supported by the consideration given to the components. The combination of AIM, as a neutral method helping participants appreciate the situation of interest, and PEArL, as a means of reflecting on the enquiry process throughout, make a powerful combination.

Use of the PEArL framework allows for comprehensive and nuanced reflection at the different stages of an AIM study. Explicit decisions about who “participates” and who doesn’t can help set the boundary for the study. Some participants may not be able to “engage” fully with the discussions the method entails; reflecting on how AIM is conducted helps to identify this. “Authority” can be exercised formally and informally, and again will have an effect on the study
Table 4.1: Elements of PEArL (adapted from Champion & Stowell, 2003)

<table>
<thead>
<tr>
<th>P – participants,</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Who are involved</td>
<td></td>
</tr>
<tr>
<td>Why are they involved</td>
<td></td>
</tr>
<tr>
<td>What is their role in the study</td>
<td></td>
</tr>
<tr>
<td>Who has been excluded and why</td>
<td></td>
</tr>
<tr>
<td>Are there transitory participants and why</td>
<td></td>
</tr>
</tbody>
</table>

The choice of participants needs to be made in a mindful way, being aware of the consequences of including or excluding. Choice of participant may be directed by sponsor. Participants may suggest further participants. Decision to be made on whether to involve them and what they will bring.

<table>
<thead>
<tr>
<th>E – engagement,</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>How will “P” engage</td>
<td></td>
</tr>
<tr>
<td>Can you identify the boundary between “P” and “non P”</td>
<td></td>
</tr>
<tr>
<td>Describe the environmental influences in which the engagement takes place</td>
<td></td>
</tr>
</tbody>
</table>

Accessibility issues.

<table>
<thead>
<tr>
<th>A - authority</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal authority associated with role – assess strength (e.g. control of resources).</td>
<td></td>
</tr>
<tr>
<td>Influences from the environment (e.g. policies)</td>
<td></td>
</tr>
<tr>
<td>What embedded authority do the tools for engagement have – describe why they were chosen and how they might influence the outcome.</td>
<td></td>
</tr>
</tbody>
</table>

Embedded authority is a key term. Authority may be exercised informally (someone who is the key worker or who knows the situation).

<table>
<thead>
<tr>
<th>r – relationships</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Insights into the commodity of power and the control strategies that are used and managed within the participant groups.</td>
<td></td>
</tr>
</tbody>
</table>

Very important. The commodity of power may be exercised unconsciously. What is the relationship of the participants with the power holder.

<table>
<thead>
<tr>
<th>L – learning</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical and Practical outcomes</td>
<td></td>
</tr>
<tr>
<td>Judgement about how this was achieved and assessment about the ownership of outcome.</td>
<td></td>
</tr>
</tbody>
</table>

Feedback loop between theoretical and practical outcomes. Who owns the outcome – a power issues also.

boundary, and on the boundaries between the participants themselves. The “relationship” aspect of PEArL enables reflection on the soft power (commodities of power (Stowell, 1989)) which can influence how participants discuss and accommodate their perspectives (Champion and Stowell, 2003, p.30, Stowell, 2013, p.20). The bringing to the surface undeclared assumptions or beliefs is very necessary to the development of shared Appreciation and proposed action. The conflicts and synergies involved and accommodations made can be viewed in terms of changing Weltanschauungen of the participants, and changes to their relationships with each other, and also the researcher (Champion & Stowell, 2003, p.31). The way in which the elements of PEArL change as the process of enquiry unfolds reflects the way in which the “socially constructed
situation” is continuously reconstructed (Champion, 2007, p.465). The models used to facilitate and record this allow authentication of the “learning” that takes place in the cycle of enquiry. The practice of AIM has developed to use the PEARL framework not only as an aid to the authentication of studies, but to add rigour to the processes within the studies themselves.

4.7 Description of Appreciative Inquiry Method

AIM is conducted in three or four phases, depending on logistics of group participation (Stowell & Welch, 2012, p.52) (Figure 4.6). In all phases, the main aim of the method is for the participants to be able to discuss the situation of interest freely and arrive at a shared Appreciation of it. The discussion is facilitated by system maps and diagrams prepared by the researcher, which the participants review, “authenticate” and use as the basis for further discussion.

Figure 4.6: Appreciative Inquiry Method (Stowell, in Stowell & Welch, 2012, p.56)

In the first stage, the participants are asked to focus on a question agreed prior to start of research. Initially each participant creates an individual system map, consisting of the central issue and subsystems which represent their understanding of the most relevant elements relating to it. The format of the map is simple, to present as little a barrier as possible to participant’s
thinking. The participants often combine what they think the situation (“is” (p.61)) and what they believe it ought to be (“ought”) when drawing the maps; realising this, Cooray (2010, in Stowell, 2013, p.19) used PEArL to help participants describe each subsystem from both perspectives in a second meeting. The participants were to think about who was involved and how, who had authority, what the power relations, and likely group dynamics were. Using this approach, participants are prompted to clarify the subsystems they have suggested, thinking also in terms of the transformation process (T, from CATWOE) needed to move from “is” to “ought”, and the Weltanschauung (W) for which this made sense. Doing this helps participants to realise and articulate their reality and value judgements (forming the basis for later discussion). In a group setting, this constitutes a second stage.

Throughout the enquiry, the participants’ comments constitute a “Socratic dialectic” (Stowell, 2013, p.19) about their judgements, which will eventually lead to an Appreciation of each other’s perspectives and arrival, ideally, at Gadamer’s (2004) “fusion of horizons”. Power relations and group dynamics between the participants, equally, start to become evident at this stage, and the researcher may also use PEArL to reflect on the enquiry.

The system maps are aggregated by the researcher into a composite system map, which is presented to the participants for authentication. In discussing the composite map, participants and the researcher continue to develop their individual Appreciation of the issue. Agreement is not always possible, but the aim is to reach accommodation about important areas and terms used. It may or may not be possible to conduct this as a group meeting; the consequences of this for gaining shared Appreciation are explored in Chapter Seven. The researcher is to be aware of Vickers’s “reality judgements” and “value judgements” in these discussions and the final composite map moves towards the participants’ shared Appreciation of the “ought”.

In this second stage (or third stage if AIM is conducted in a group setting) relevant sub-systems are discussed in terms of being purposeful activities, what “ought to be”. “Root definitions” of the sub-systems most relevant to the participants are developed from a series of interviews or meetings in which the researcher encourages the participants to reflect on the sub-systems’ transformation process and the worldview for which the sub-system and the process model developed for it makes sense (West & Thomas, 2005, p. 438). The definitions are discussed with the participants, who authenticate them. These definitions are similar to the root definitions in SSM: “concise description[s] of a human activity system which captures a particular view of it” (Checkland, 1999, p.167). The difference is that they are used to give a further opportunity to the participants to discuss what is required, and to move towards shared Appreciation.
In the third / fourth stages, activity models are developed from the root definitions, suggesting activities needed to execute participants’ views of the desired situation. Participants are again engaged to discuss these, comparing their representation of the “ought” with the situation as it “is”, to determine solutions feasible in the context of the organisation. As before, the emphasis is on the participants gaining a shared Appreciation, which brings the benefits of intersubjectivity.

As intimated earlier, power exercised by participants in the situation can influence the outcome. Stowell & Welch (2012, p.56) propose the use of A (authority) and r (relationships) to reflect at all stages on the power relationships between the participants. They encourage the use of PEArL generally, both to frame the enquiry and to reflect on it; care must be taken when authenticating the research that the exercise is not self-referential, and this is discussed in Chapter Seven.

Exploring the situation of interest and arriving at a worthwhile question are important steps in AIM that can influence how a study progresses. Checkland (1985) emphasises the need for interpretivist enquiry to be “agnostic”, the researcher being aware of his/her own framework of ideas and experience, and being mindful not to allow this to influence the study, so a first requirement is for the researcher to take a neutral stance. Context is important in determining the situation of interest and is linked with the setting of the boundary. Churchman (in Stowell & Welch, p. 110) suggested that “the identification of a system and its boundary [relate] to individual or social constructs of their ‘reality’”, so participant-led concerns should be taken into account. In practice it is likely that the initial discussions will be with those who have authority (e.g. the sponsoring manager), that could lead to suggestions of bias towards a managerial viewpoint. This is countered by mindful discussion with authority or rich pictures drawn from participant-led concerns. Stowell and Welch (2012, p.56) propose the use of PEArL to reflect on this.

4.8 Using AIM

AIM has been used in different ways, reflecting its development from knowledge elicitation to enquiry, and from working with a single participant to a group workshop approach. One of the aims of the thesis (p.14) is to be part of this development process. In this section, different uses of AIM are discussed, as a pre-cursor to the researcher’s own actions to learn it. The threads are pulled together at the end of the chapter to show how it is to be used mindfully in the field study. Before moving on however, the implications of a criticism of the FMA model for the chosen methodology are examined.
4.8.1 Accommodating AIM in the FMA model

West and Stansfield (2001, p. 255) define M in reflection as “the way in which the action was undertaken” and F as “the theoretical basis from which the action stemmed”, the “theoretical stance” in which the “ideas (M) are embedded”. They comment that in later versions of the FMA model, action has been included in the learning cycle, and include examples from their own action research studies. The FMA model has been criticised in the context of problem solving by McKay and Marshall (2001, 2007) on the grounds that it does not distinguish between the two responsibilities of the action researcher, one relating to advancing understanding of the research approach, the other intervening to improve the situation (the “consultancy” critique). They suggest that the rigour of the research findings can be increased dividing Methodology to allow reflection on dual cycles of activity, that concerned with the research method itself (MR) and that concerned with the problem solving methodology used by the participants (MPS) (Figure 4.7).

Figure 4.7: Concurrent cycles of enquiry in action research (McKay & Marshall, 2001, p.57)

The concept of dual cycles of reflection is integral to action research, and in suggesting a refinement to the FMA model, Mackay and Marshall are merely acknowledging this. Adapting their idea for research carried out in the enquiry tradition, “I” can represent the situation of interest and “MI” represents the enquiry process conducted by the participants in the situation of interest. So for this research:

- F Interpretivist approach
- MR Action Research
Adapting this idea for enquiry based research allows us to distinguish between reflections on research (MR) and reflections on what has been learned in the situation of interest (MI), expressed in Chapters Eight and Nine.

4.8.2 One-to-one studies

Champion (2001, p. 74) found in her pilot study that AIM was not a quick and simple method. Problems she encountered include participant comprehension, the rote nature of the CATWOE questions (p.59) and the complexity introduced by system maps with many ellipses and potential root definitions and activity models. On the other hand, in West & Thomas’s study (2005, p.436) of knowledge elicitation in Renfrewshire Council (a study directed at helping a senior manager to think clearly about strategy) the sole participant felt that the broad overview was useful, and was pleased at the simplicity and speed of the task, and that the CATWOE questions, while difficult to use, provided a valuable structure for eliciting description of an activity. AIM carried out as a knowledge elicitation exercise on a one-to-one basis may certainly be a simpler proposition. In a later study where two participants of different nationalities were encouraged to explore a domain of common interest, West (private conversation, 2013) found that the lack of a shared language led to fewer assumptions relevant to language, but that the use of CATWOE was crucial to check for sense in the discussion. Her preference was for one-to-one contact, for the purposes of eliciting expertise, believing that relationships and exercise of power in a group study interfere with obtaining this. In the view of Stowell (private conversation, 2013), the method has moved on to Appreciation of the situation of interest, where “is” and “ought” are used to help participants reflect on change as a way of clarifying their thoughts and bringing to the surface their tacit values.

4.8.3 The workshop approach

AIM has been used and further developed in day-long Systems Practice for Managing Complexity workshops, conducted by Stowell, Welch et al. (Stowell & Welch, 2012, p.49). Workshops were held in a city to explore the issues for urban regeneration and social services. The participants were divided into sub-groups, each aided by a facilitator, and progressed through the method, initially in the subgroups, then in plenary session, developing their ideas in a cycle of learning, through discussion of the system maps, root definitions and activity models. The PEArL framework was used by the participants to help them Appreciate the dynamics of their interactions in group discussion (Stowell & Welch, 2012, p.13), and then for sense-making: “We
have found in the workshops that one way of enriching the thinking at this stage and helping the participants to think about the wider issues of each of the sub-systems is by using the PEArL framework” (Champion & Stowell, 2003; Cooray, in Stowell, 2012, p.16). PEArL and T and W from CATWOE helped develop richness of Appreciation. The purpose was to engender a cycle of learning (Stowell, 2012, p. 14), encouraging participants to increase their Appreciation of the issues and each others’ views. In the final stage, the participants selected a sub-system for which to formulate an activity model, showing “what ought to be”, again using PEArL to enrich understanding. Thus, AIM used in a group setting is a powerful method for moving swiftly to Appreciation.

An action research approach has been discussed, and the contributions of different traditions of action research have been assessed. In the terms of the FMA mode, the framework of ideas is interpretivist, and AIM is proposed as the research methodology: its ability to help participants in organizations to realise what they know about a situation of interest has been described. It is to be applied within a research organization to aid the research participants in their exploration of knowledge sharing.

4.9 Learning from pilot studies using AIM

In an action research method such as AIM, the capabilities of the researcher are important in facilitating the participants’ enquiry. The importance of researcher skills is outlined in qualitative research texts (Robson, 2002; Creswell, 2007), and Seale (1999, p.476) comments that while methodological awareness is a valuable resource, the practice of a research method is a craft skill, often learned “on the job”. Crucially in AIM, the researcher must go beyond awareness of how her views are situated; she must be a “considerate stone” (Shakespeare, Antony and Cleopatra 2 II, in West & Thomas, 2005), listening mindfully, rather than influencing. Pilot studies were undertaken to practise this mindful listening, to gain experience in using AIM, to experiment with different tools and meeting permutations, and to learn what could be expected as outcomes of the method. Some insight was also gained into the logistical issues and constraints which can arise. Claims for AIM were put to the test: that it is a method that helps participants to give up their ideas about a situation of interest and develop a shared appreciation, that it is simple for participants to understand and is not time-consuming (Stowell & Welch, 2012, p.50).

The domains chosen as situations of interest were familiar to the researcher, enabling concentration on the interplay of discussion between the participants. The pilot studies were not concerned with knowledge sharing in an organization as a specific topic. The first study looked at key considerations to be taken into account when conducting action research. It provided the opportunity for the researcher to learn the processes and diagramming techniques and to gain

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some initial experience in using the method. The second and third studies were carried out to
enquire into issues in the School of Computing (University of Portsmouth), using the logistical and
methodological lessons from the first study. In the second pilot study, the researcher focused on
the interactions between the participants, the use of the PEArL framework, and on the practical
difficulties of remaining neutral. In the third pilot study, the researcher experimented with some
logistical aspects and made a more conscious attempt to use CATWOE and PEArL throughout. The
pilot studies are discussed in detail in Appendices A, B and C, together with the researcher’s
learning about the method. The researcher’s cycle of learning is summarised in this section. Some
remarks are made about the methodological and practical Appreciations that researchers need to
gain, to use the method to develop their own expertise in facilitating participants’ interactions.
Lessons learned are described according to the PEArL framework, which was used both to
structure and to reflect on the individual studies. More general learning is also described.

By the conclusion of the pilot study phase, the researcher’s experience of the method positioned
her to take it into the field study domain. Contributions from the practice of AIM by other
researchers were considered, and the chapter ends with an account of the lessons to take
forward to the field study.

4.9.1 Participant involvement
In all three pilot studies, the choice of participants was made by the researcher or her supervisor.
In other AIM studies, the researcher’s choice of participants could be dictated by owners of the
area of interest, be further suggestions from the participants themselves, or may even be
serendipitous.

The choice of participants in the first pilot study was influenced by the supervisor, who indicated
people who were knowledgeable about the issue and who, it was hoped, would engage with the
study. In the event, one potential participant was discounted for contingent reasons, while one of
the participants selected became unavailable in the course of the exercise. In the second and
third pilot study, the choice of participants key to the area of interest could have resulted in a
more complex, shared insight. The exclusion of a participant limits the richness of contribution to
the question, and possibly the authenticity of the research. The researcher needs to be aware of
the potential effect on the direction of the enquiry introduced by excluding a participant on
logistical grounds. Champion & Stowell (2003, p. 28) suggest recording reasons for inclusion or
exclusion of participants, to allow judgements to be made about the authenticity of the enquiry.

Where the issue has some urgency, the motivation of the participants to explore it is greater. This
had a positive effect on engagement with the second pilot study, and was a lesson carried
forward to the main field study. The participants’ various previous experience can be reflected in
some of the power issues influencing the interactions, but also add a historical “depth” to the
discussions – this was the case in the third case study. Bednar (in Stowell & Welch, 2012, p.74) comments about the researcher’s perceptions of the effects of participant personality, which can be elucidated by the use of PEArL at the different stages of the study; in the second pilot study, the researcher had concerns that one of the participants would be silenced due to her lack of experience, but this did not become an issue. The effect of participants knowing each other beforehand is unclear: on the one hand, they may broadly agree with each other; on the other the discussions may be reduced to a set of rehearsed positions.

4.9.2 Engagement
As the pilot studies progressed, the value of AIM’s perspective on the role of the researcher became clearer. Although the method is in the action research tradition, the researcher is required to stand back, to be agnostic to the outcome of the enquiry and not to influence the participants. In practice, this meant that the researcher needed to be mindful of her own perspective throughout, both her initial position and how that position might change in light of the participants’ unfolding Appreciation of the situation of interest. Her role has similarities with data collection in Grounded Theory (Glaser, 1978, p. 3) where the researcher is to “remain sensitive to the data” without filtering or fitting it to pre-existing hypotheses. The area of interest in the second pilot study was one in which the researcher had had authority in the past; choice of this topic helped to underline the need to return control to the participants at all times. On the other hand, the evident trust in the researcher as a known quantity, exhibited in the plenary session in the second pilot study, meant that the discussion appeared to be more open. The researcher needs chairing skills, and to avoid too rapid a deduction of the participants’ Weltanschauungen.

With this in mind, initial interactions between participants and researcher should provide sufficient detail to allow the researcher to work on the modelling stages of the approach away from the meeting, so as to take up as little of the participant’s time as possible (West & Thomas, 2005, p. 431). To capture the richness of the individual system maps in the composite map and the root definitions without losing sight of the most relevant subsystems, the researcher must return to the participants to authenticate the models produced. The researcher’s questions to the participants can make use of “Transformation” and “Weltanschauung” from CATWOE or PEArL to distinguish between “is” and “ought”. This approach was attempted in the second and third pilot studies, but care was needed not to hinder the flow of the participants’ ideas. Experience in using these tools is required; the researcher is presented with a high cognitive load in meetings.

One of the major learning points in all the pilot studies was the logistical difficulty in arranging meetings, and this proved to be a useful lesson for the field study. Difficulties included limited availability within the time frame of the study, withdrawal of participants even when availability
for the duration of the study was one of the selection criteria, problems in arranging plenary sessions or keeping diagrams in step. These issues influenced the direction and the completion of the studies, and the researcher’s perception as to whether shared Appreciation had been achieved. When using mitigation strategies, for example to substitute for missing participants, the researcher should be mindful of the potential effect on the enquiry.

The pilot studies showed the value of holding a plenary session, to increase the opportunity to arrive at a shared Appreciation of the situation of interest. Where it was not possible to do this, the researcher must make sure that each participant is aware of the other perspectives – this necessarily introduces further meetings, iteration, and a reduction in the “light touch” quality of the method. In the pilot studies, arriving at agreement or accommodating differences between individual perspectives could have been more difficult had not the participants been in broad agreement about the situation of interest. This is a weakness in the one-to-one version of AIM.

4.9.3 Authority
The concept of Authority was not a major influence in the pilot studies. The closest to an Authority role was the inclusion of the project coordinator in the second case study – although his is a facilitation role in managing the projects. In this case he could have made some changes to the situation of interest as a result of the discussions had he wished. The deputy Head was a participant in the third case study but for the purposes of the study, he took the perspective of a lecturer interested in group work, rather than exercising authority. In all the pilot studies, ultimate Authority rested outside the participant groups. When carrying out a field study in a different organization, the issue of Authority is likely to be more prominent. There is also the possibility that authority for a situation of interest may be diffused amongst several roles and individuals.

4.9.4 Relationship
The second and third pilot studies revealed some interesting ideas about how relationships affect the enquiry process. In the second study, two of the participants possessed soft power (one through his position, the other through her experience) but they did not make explicit claims. The power in the situation was revealed as conversational cues, to be detected by the researcher. The interplay between personalities was also important; the third participant was less experienced, but had definite points of view and was able to contribute her ideas.

The studies confirmed that the researcher needs to be mindful of the relationship between herself and the participants. In the second pilot study, the researcher possessed some power, by virtue of having previously carried out the role of one of the participants. At times the participants deferred to her, and she had to move the discussion back in their direction. At other times, advice on specific topics in the situation of interest was sought by the participants. The positive
aspect of this was that the participants trusted the researcher, which meant that discussions were particularly free in the plenary session, and the opportunity to have their opinions validated seemed to be valued (this study was the most successful of the three in enabling the participants to realise each other’s views). In the third pilot study, trust again played a part when one of the participants used the one-to-one sessions to meditate freely on his teaching practice.

The role of the relationship between the researcher and the participants had a different aspect in the third pilot study. Because it was not possible to hold a plenary session in this study, the participants were reliant on the researcher to facilitate the exchange of views as part of the one-to-one sessions. Had the participants been able to discuss the activity model in plenary, it is possible that more aspects of their relationships to each other and to the researcher would have emerged. The study became a de facto exercise in seeing how the views of the participants could be exchanged when they were not meeting in plenary. There were similar issues for the initial meetings of the main research study, and the implications for the method are discussed on page 137.

The researcher was previously known to the participants in all the pilot studies, which had some advantages (trust, ability to recognise conversational cues). Although knowing the participants removed one layer of complexity from learning the method, it meant that there had been no practice in taking AIM into a field study setting where participants would be unknown.

4.9.5 Learning

In the first pilot study study, there was perhaps an over-emphasis on the researcher’s use of these tools and diagrams for sense making, at the expense of discovering the participants’ shared understanding. In earlier AIM studies, similar logistical issues were encountered. On the one hand, Champion (2001, p. 74) found in her pilot study that AIM was not a quick and simple method. Problems she encountered include participants’ comprehension of what was expected of them, the rote nature of the CATWOE questions and the complexity introduced by system maps with many ellipses and therefore potential root definitions and activity models. On the other hand, West & Thomas (2005, p.436) found that although the constraint led to a low level of detail, the participants felt that the broad overview was useful, and were pleased at the simplicity and speed of the task, and that the CATWOE questions, while hard work, provided a valuable structure for eliciting description of an activity.

In the second and third pilot studies, more use was made of PEArL, but the most significant benefit for the participants’ learning was the opportunity to reflect on the issue, and to react to each other’s ideas as expressed in the system maps. In the second study, very real learning took place: one participant stated “I wish I had known that earlier!”, and the project coordinator participant made a realisation about pairing markers which had the potential to change his future
4.9.6 General learning

In additions to the lessons described above, some further generalizations could be made from the pilot studies. In all the studies, the question to be discussed had been framed by the researcher before the start. The participants in the studies accepted the questions as given. However there is the risk that a poorly formulated question (or one not relevant to the participants) would hold back the enquiry, waste time and squander goodwill. An alternative would have been to involve the participants in deciding what the question should be, as a pre-study activity. This would have allowed a focus on topics of particular interest to the participants, and would have given some preliminary insight into the relationships between them. Discussions during Stage One may lead to a change in the boundary of the area of interest or to the reframing of the issue (West & Thomas, 2005).

The studies showed how the choice of participants could influence outcome, either through biasing it towards a dominant worldview, or by restricting the view to a set of agreed norms by insufficiently wide selection. In the first and second studies, the omission of a potentially key participant meant that the discussion may not have developed as suggested by the situation of interest. The researcher thought about the effects on the enquiry of introducing a new participant at a late stage in a one cycle of the enquiry, with the possibility that the Weltanschauung of the new participant would change the appreciation of the situation significantly.

A major, if obvious, advantage of the method was the learning provided by the participants to the researcher. In the first pilot study, the participants agreed about the importance of an ethical approach to action research; in the second, the power relationships around project marking were exposed; in the third, different approaches to setting group coursework were revealed. Had the studies been used to inform recommendations for action, these lessons would have been useful. Relations between researcher and participants and between the participants themselves are important: participants are more ready to give up their thinking and to reveal their tacit understanding if they can be brought to trust the researcher.

The researcher’s appreciation of PEArL grew, first in structuring, then in reflecting on the pilot studies. As the studies progressed, the researcher was able to move away from experimenting in a mechanistic way with the framework, to using it in a more reflective way, noting how the constituent elements changed through the various stages of the studies (cf Champion, 2007). The researcher learned about the practical and methodological problems involved when a study is conducted without plenary sessions being possible, and understood some of the reasons why AIM
has developed to include plenary sessions. Experiments were made with the use of the PEArL framework during the process, to allow the authenticity of the study to be assessed by interested, but non-involved parties. In the third study, the researcher tried unsuccessfully to use the PEArL framework to structure discussion with one of the participants, which inhibited the flow of the participant’s ideas. It was better used in one of the plenary sessions in the second study to guide discussion about the actual situation and the situation as it “ought to be”. The researcher used natural language questions based on the PEArL concepts to do this and then used PEArL again to reflect about what was discovered. This accorded with the later versions of AIM (Stowell, 2013), where PEArL is now closely linked with the method at most of the stages. It is important that the researcher documents this approach for authentication. Using PEArL during the enquiry process raises the question as to whether it is self-referential to use it again to authenticate the process. This is not an issue if it is borne in mind that it is a framework reminding the researcher to consider important aspects at all stages of the study (cf Champion, 2007, p.465).

The diagramming notations used in AIM are easy to understand: production of system maps presents few difficulties for participant or researcher. The development of root definitions and activity models is supported by its own literature (Checkland et al, 1981, 1985, 1990, 1991, 2005). Aside from the inter-personal skills needed to practise AIM, the value of the method lies in the deep reflection on what participants are saying; the realisations about method drawn from the three AIM studies described here focus on this. In the studies, use of the PEArL framework prompted reflection; in helping a participant learn AIM, PEArL can be a teaching aid to help the participant develop the capacity to realise what he is hearing.

For both studies, the researcher found that facilitating drawing up systems maps was straightforward, but needed to keep in mind when preparing the composite map that the participants’ systems should be included in their original wording, for authenticity. It appeared to be valuable to allow the participants to have free-ranging, reflective discussion when meeting individually. Certain participants did this naturally; the new lecturer in the second study asked for advice about her marking problems, and the programme coordinator in the third study seemed to prefer a discursive approach. It also helps the researcher establish the participant’s Weltanschauung. The disadvantage is that some of the richness is not brought out in the plenary sessions in the later stages. Allowing this discussion is perhaps more appropriate during later stages in the plenary sessions, when differing views about a specific activity are explored. However, at the individual system map stage, it can allow the researcher to build trust, important for uncovering the participants’ tacit norms and values.

Discussion with the individual participant is useful to review the fitness of the researcher’s modelling; however in AIM, participants’ time commitment should be low. The researcher
discovered that in all the studies, particularly where the meetings were held one-to-one, there is
the possibility of iteration, needed to get the best understanding of what the participants mean.
If the researcher refers back to the participants for “quality” purposes, the time taken and
logistical difficulties for the study can increase. This is partly acknowledged in the later version of
AIM (Stowell & Welch, 2012, p.52). In the studies the researcher experimented with practice of
AIM to accommodate contextual and logistical factors and to determine how far AIM can be
adapted before it stops being appreciative enquiry or recognisable as the AIM method. This
experimentation compared with the ways in which different authors practised AIM (Stowell &
Welch, 2012, p. 49), leading to its evolution into its current form.

When there are orthogonal views amongst the participants, as in the third study, they could exist
on a continuum from complete accord, through “violent” agreement (realisations the same,
justifications different), through differences participants can accept and accommodate through to
irreconcilable differences, which need to be acknowledged. The researcher should be mindful of
the relationships between the participants, to see how agreement is reached, to encourage them
articulate their tacit views and world views and to produce useful reflections and models for
subsequent stages in the process. Cooray (2010) refers to relationships in a group setting. More
reflection is needed to uncover the tacit norms and values in the situation of interest. If the
researcher already knows the problem domains and the participants, surfacing these tacit norms
and values is at once easier and more difficult. It is easier because the sense-making effort is
reduced but more difficult because of the challenge to the researcher to see with fresh eyes.

In recent discussions of AIM, the value of the plenary session is acknowledged, although it can
involve “challenge and debate” (Cooray, 2010). In the third study, the researcher was able to see
how an AIM study could be conducted without plenary sessions. Input from a non-plenary
participant was possible but the extra meetings needed added to the time taken. The study
raised questions about the practicalities of enabling participants to share an understanding of a
situation of interest when plenary sessions are not possible. Another question for AIM was that
the direct involvement of participants is said to be small, but in all stages, there is the potential
for iteration, needed to get the best understanding of what the participants mean, or their
opinions on the modelling at early stages. Referring back to the participants for further comment
or to keep the models aligned can take up significant time.

Completion of a cycle of enquiry could be when the researcher believes that the participants have
said everything they want to say about the subsystem under discussion (“saturation”), or when
the participants themselves believe they have come to a natural conclusion. Among the possible
actions resulting from a completed cycle could be communication to the holder of authority for
the situation, although this will depend on the terms of the question and the nature of the
relationship between the participants and the authority. It was clear in the second study that one cycle of enquiry had been completed; this was less clear in the third study.

Participants in interpretivist methods such as AIM are best helped to understand them by experiential learning. For participants to use a method in its fullest sense rather than naively, as a tool kit, realisations that come from learning by doing must be made. Conducting an AIM study involves the researcher in her own cycle of learning, gaining an appreciation of the situation of interest and also engaging in deep learning about the method. One of the outcomes of AIM is equipping the participants with the ability to use it and think systemically about their situation. The researcher must at once learn how to use the method and facilitate sense-making for the participants. She must also pay attention to how the findings can be authenticated. This is a complex set of skills and appreciations to acquire, in common with many of the action research approaches discussed earlier in the chapter.

A proposed way of helping participants to learn the method is to engage them in a cycle of learning. Drawing on the researcher’s own experience, as a first exercise, predetermined questions and boundaries can be set and suggestions made about participants. This gives them a safe space in which to practice the skills needed. The first cycle of enquiry can focus on acquiring the skills (diagrams, root definitions and modelling, interaction with participants), with some initial reflection on what is being learned. In subsequent iterations, the participants should be encouraged to reflect on participant choice, nature of engagement, what has been learned about question and boundary setting. It is then possible to move on to considering how authority and relationships influence the progress of the study and the revealing of tacit values.

4.10 Summary and recommendations for use

From the studies carried out by the researcher, and the experience from case studies carried out elsewhere, AIM is a powerful method for enquiry, enabling participants to appreciate their situation, preparatory to taking appropriate action (Stowell, 2013, p.11). The method takes the participants through cycles of enquiry, where understandings, assumptions are taken apart and reconstructed. The value is in more nuanced considerations of: boundary, appreciation, the value of surfacing the hidden assumptions and engaging in learning.

The lessons for the researcher from the three pilot studies were as follows:

When starting an AIM study, the reasons for inclusion or exclusion of participants should be recorded. The choice of participant can influence how the study progresses. Formulating a question or identifying a situation of interest for enquiry that participants want to engage with is a priority before the study starts The participants’ motivation for becoming involved may also be
important, but not necessarily apparent at the start of the study. In all the pilot studies, participants left part way through, and the potential consequences of participants leaving and joining the study should be considered at the start.

The PEArL framework can be used throughout the study, providing structure, and a means for both the researcher and the participants to think about the process as the study progresses, but it should not be used mechanistically. The researcher suggests an analogy with Mode 2 of SSM, where the tools and techniques are internalised by the researcher (as in knowledge-as-practice). Champion and Stowell (2003) make claims about the PEArL framework’s contribution to authentication and rigour; this can only be the case if it is used reflectively, to avoid the possibility of self-reference when using the tool. As a framework for designing a study, PEArL acts as a reminder to take certain factors into consideration.

In the spirit of the interpretivist paradigm, the researcher needs to be mindful about her own value judgement, and to declare it to herself before the start of the study. As the researcher is a co-participant in the study (albeit as a facilitator rather than a contributor), this shows the basis from which she is making sense of what she hears. Where the researcher has prior experience of the situation of interest, she needs to be aware of how this affects her readiness to notice, or ability to see with fresh eyes. The researcher may not influence the discussions of the participants, but must be alert to the tacit values and potential conflicts of opinion in the most slight of comments. The researcher’s sense-making is in the service of the participants’ development of a shared appreciation. The participants’ authentication of this sense-making (in the form of system maps, root definitions, models) essential.

There is a high cognitive load on researcher in meetings – listening, noticing, chairing skills. The studies underlined the need for the researcher to have facilitation skills when working with often strong personalities. The pilot studies showed that interactions were richer when the participants trusted the researcher, who provided a “safe place” for their exchange of views, allowing participants to “feel heard”, as part of reaching a shared appreciation. Facilitating the participants to express their range of the views, from agreement, through different perspectives (orthogonal views), to disagreement and accommodation is an important aspect of the method. The interplay between the personalities in the plenary session showed the usefulness of the “r” (relationship) component of PEArL, for drawing the researcher’s attention to the soft power issues.

The ability of the researcher to perceive whether the participants are reaching shared understanding is influenced by the way the AIM study is carried out: whether as a one-to-one study, as a group study without full plenary sessions and a full workshop implementation. In workshop or plenary, it is easier to see the interactions between the participants. In one-to-one
sessions, the absence of immediate relationship or commodity of power influences is offset by the need for further checking, needing more time, and greater reliance on the sense-making abilities of the researcher. It follows that the researcher’s awareness of her own position, and need to reflect accurately what others say during the mediation is crucial in the on-to-one study. The value of using PEArL and some elements of CATWOE has been demonstrated, and also the value of including plenary sessions where possible.

Although the meetings kept to time in the pilot studies, the claimed low time commitment cannot always be achieved because of the potential for iteration in the one-to-one studies to check ideas. There is also a potential conflict between the simplicity of the method and the richness of discussions. These allow the development of trust, but richness can be lost as the models are refined. A further cycle of enquiry can be entered, if the participants think ideas are important enough. In the second study, it was clear that one cycle had been completed. This was less the case in the third study. A learning and sense-making tool for both R and P. R’s cycle of learning about the method, complex skill to acquire: facilitating Ps, learning about method, situation, authentication.

Revisiting the claims made for AIM in the literature, the pilot studies provided some insights. The claim that the method helps participants give up ideas and develop a shared appreciation of the area of interest was partly justified. Participants were generally forthcoming with their views, possibly because they trusted the researcher. The plenary session in the second study was the best evidence for shared appreciation. This was not so easy to determine where one-to-one sessions were the main interaction. Participants did easily understand the method, and rapidly moved to treating the models as a prompt for free discussion. There were problems in some of the one-to-one sessions where questions based on PEArL were too mechanistic – a natural language approach would be better. The claim that the method is not time-consuming, and can be conducted as a “light touch” with busy managers, was not well borne out. Although the pilot studies kept to the planned timings, there was the potential for much more time to be taken to improve the quality of the shared appreciation.

Having identified these initial concerns, AIM was adopted as the research methodology. This approach focuses on developing shared understanding in specific contexts, interpreting human experience, and giving participants ownership of their own investigations. The essence of the approach is that the researcher does not impose his/her own views on the participants, but provides a space in which they can develop their understanding.
Chapter 5: Research plan

5.1 Introduction

In previous chapters, the framework of ideas and methodology for the research were given. In this chapter the plan for research is outlined. The setting of the field study is described. The researcher’s interest in knowledge sharing practice coincided with the participants’ willingness to explore what their own knowledge sharing issues, in an organization where knowledge sharing is key. There was interest also in how the Appreciative Inquiry Method could be used within the organization.

One of the means by which the quality of qualitative research can be assessed is by its transferability to other situations. A full description of the contextual factors relating to the enquiry is needed (Guba & Lincoln, 1982) so that the reader can assess how relevant the findings are to his situation. This full description is provided here and in Chapter Six.

5.2 Selected organization

5.2.1 Purpose

The organization provides scientific and technical knowledge services to clients in UK government departments. Originally part of the Civil Service, its remit is to maintain the science and technology knowledge base for the benefit of its clients, to develop its expertise in new areas and to act as an interface between the client departments, industry and academia, in work on client projects. It provides expert advice and analysis to its clients. It is also required to exploit its intellectual property by developing new products, by publishing in peer-reviewed literature and by increasing its customer base. To achieve this, it must recruit and develop staff with science and technology skills, and manage their careers. At the same time, financial constraints mean that the workforce is contracting, and more emphasis is being placed on working with other sources. From a position where the organization conducted all research activities on behalf of its government clients, its role has changed. A main requirement is now to integrate and package research for the client rather than to generate it, acting as a central hub in collaborative work. The presumption is that work should be carried out by an external supplier unless there is a clear reason for it being done by the organization. Research which can be carried out in the private sector has been outsourced, with the organization responsible for the budget and the tendering process; strategically important research remains with the organization but it has to provide matched funding to conduct it. Client work is managed as a set of projects and programmes, through an account management structure. The organization’s ethos is to be trusted, safe and collaborative, providing an essential and independent service.
5.2.2 Business model

The organisation is constituted as a Trading Fund, a part of the government which is able to use income from its activities to cover its costs (National Archives, 2003), and government policy specifies its modus operandi and its funding. It is also a fund-holder, deciding how to disburse research funds to other organizations, within the terms of its operating arrangements. Policy is directed towards efficiency and “value for money”, achieved by competition and maximising value of the research to public and private clients. The organization itself is funded by customer contracts with its clients and third parties, by consultancy work carried out by its staff and by use of its specialist facilities. Its strategic plan discusses the requirement to increase the proportion of contractors and fixed-term appointments to cut costs, and acknowledges the reduction in sales due to reduced activity and austerity measures in its client government departments.

5.2.3 Structure

The organization consists of a number of operating departments, mirroring the government departments on whose behalf they conduct research activities and whom they provide with expert advice and analysis. The operating departments are supported by a central Knowledge Service function, whose task is to facilitate their work, providing document repositories, literature reviews and subject expert search. This function is also concerned with strategies and procedures to take advantage not only of explicit knowledge in a “knowledge as a commodity” sense, but also to attempt to capture and promulgate what is “known and used”. Representatives of the Knowledge Service function work in each operating department as a point of contact. Improving knowledge management is a key area of the strategic plan, and some of the mechanisms and practices for doing this are described in Chapter Eight, following discussion with the field study participants.

The organization has networks of relations with outside bodies, including academia, professional and scientific bodies and standards committees. However a recent survey of relevant academic departments showed that many had not heard of the organization. There is also the possibility that, in not realising their tacit knowledge, they may not have a clear or complete offering for external bodies other than their main clients. Thus, the organization is knowledge-intensive, with strong links to its clients.

5.2.4 Challenges

The strategic plan has identified a number of contextual challenges. These include funding cuts and changes to procurement procedures in its client departments, with a resulting impact on its revenue from projects, competition for qualified staff and a constantly changing environment. The risks posed by these challenges include the difficulty of responding swiftly to these changes,
lack of knowledge of capability outside the organization, leading to poorly informed investment and disinvestment decisions, and lack of investment in knowledge and information management capability. An area of improvement identified by the organization is to share knowledge and best practice not only in the organization, but throughout the wider scientific and technical community, as part of improving its capability.

### 5.3 Initializing the study

This interest in improving knowledge management in the organization supports the notion that the research was mutually conceived. The research was not commissioned as consultancy, but the researcher’s interest in knowledge sharing coincided with the preoccupation with effective knowledge management on the part of the participants in the study. The enquiry-based approach taken did not result in plans for action, to be taken forward in the organization, but ultimately the participants gained an appreciation of the aspects of knowledge sharing which were of most concern to them, and ideas which could be carried forward to inform further work, if they thought necessary.

Initial discussions were held with the Chief Scientific Officer (Head) of one of the operating departments, who acted as gatekeeper for the study. From these discussions, it was gathered that there was concern within the organization with issues which influence how knowledge is defined and used. It is viewed both as an asset and also as praxis; both aspects of knowledge need to be used effectively to meet the organization’s remit and help justify its continued existence.

Strategies and procedures have been created to take advantage explicit “knowledge as an asset” and also to attempt to capture what is knowledge-as-practice. One of their issues was how to make this knowledge management more effective. Another issue is how far capturing tacit knowledge is possible within the constraints of the organization. The language used about capturing and sharing knowledge was very much directed at “knowledge as an asset”, in the use of repositories of published works, databases of contacts. This appeared to influence mechanisms set up to share knowledge-as-practice: the use of communities of practice, subject experts, e-profiles and blogs. Subject experts are considered to be “resources” from whom this knowledge is to be extracted. Apparent issues were how to make knowledge management devices more effective, and how far capturing tacit knowledge is possible within the constraints of the organization. Figure 5.1 is a rich picture which shows the researcher’s understanding of the organizational context and some of the issues at the start of the study.
Figure 5.1: Rich picture of organizational context and issues
When initialising the study, advantage was taken of the relationship between the research supervisor and the manager who acted as gatekeeper. The supervisor was in discussion with the organization about AIM and was working with the manager to arrange AIM workshops. The manager was interested in introducing AIM into his department and into interactions with clients. It was suggested that an AIM study into knowledge sharing would be useful to both parties. It emerged later that the manager had discussed the study with a director of the organization, who it appears had given tacit consent. The field study was both researcher-driven and client-driven (Avison & Wood-Harper, 2003). It originated with the researcher and was used to enquire into a topic of interest to her. Knowledge sharing is important to the organization (Swales, Wright & Oxenham, 2011) and the manager sponsoring the study was interested in the method and the subject. The study had relevance for them, going some way to ensure that participants would engage with it (Kock, 1997).

5.3.1 Participant selection

Two lessons from the pilot studies was the need to be mindful at the start when selecting participants, and the usefulness of the PEArL framework when thinking about engagement and authority at the start of a study. Following an initial meeting between the researcher, the supervisor and the manager to discuss some of the issues which could be explored, a study proposal was accepted by the manager (Appendix D). He (identified below as participant A) initiated participant selection by suggesting names of participants and engaging their interest in the study. There were five participants in the study (Table 5.1): the senior manager, a team leader and a librarian from the Knowledge Services department, the senior manager (with whom the initial discussions were conducted) and a team leader each from different operating departments.

<p>| | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>A</td>
<td>Senior manager, operating department X</td>
<td>Works at site twice a week</td>
</tr>
<tr>
<td>B</td>
<td>Team leader, Knowledge Services department</td>
<td>Based at site</td>
</tr>
<tr>
<td>C</td>
<td>Librarian, Knowledge Services department, working in operating department X as point of contact</td>
<td>Based at site</td>
</tr>
<tr>
<td>D</td>
<td>Senior manager, knowledge services</td>
<td>Visits site occasionally</td>
</tr>
<tr>
<td>E</td>
<td>Systems engineer, operating department Y</td>
<td>Based at site, travels to meetings at other sites</td>
</tr>
</tbody>
</table>

Participants were selected because they had an interest in the topic, and were all involved, in various ways in knowledge sharing practice. Participant B wanted to take part because he was
interested in AIM, participant C because she was interested in the topic. Participant D decided to participate after discussion with B. Before the study commenced, a pre-meeting was held with two junior members of the knowledge services department, B and C, together with A. The researcher and supervisor discussed the purpose of the research and described AIM in general terms. The purpose of this meeting was to engage the participants’ interest and willingness to take part. Participant A met with B and C to discuss possible participants who would be interested in taking part in the study. Two further participants were suggested and were contacted by e-mail (Appendix D. Participant D as the manager of the Knowledge Services department was not personally known to A; they had exchanged e-mails about work matters but in fact did not meet until the last plenary session (discussion of activity models). E is a systems engineer working in a different operating department to A. Participant A indicated that he would be a useful contributor, having views on the topic and being independent.

The possibility of manager bias was considered but discounted because the manager was not in a position of influence over the other participants – they were from the Knowledge Services department liaising with his department and from an unrelated operating department. The researcher’s perception was that the manager was an honest broker, who was interested in experimenting with methods which could be of benefit to his department.

**Figure 5.2: Relationship between participants and their organizational environment**

![Diagram showing the relationship between participants and their organizational environment]

- Direct report
- Seconded to team
- Informal link
- Included in study
The boundary for the study was dictated by the responsibilities and formal influence of the participants, limited to the Knowledge Services department and A’s operating department. E had no authority to make changes in his department. The organization’s board of directors and clients are outside the boundary. In effect, following Checkland (1981), the “system” under consideration is knowledge sharing in the organization, rather than a structural part of the organization itself. Figure 5.2 expresses the researcher’s understanding of the relationships between the participants and their organizational environment.

Ethical issues were considered. A had a concern about commercial confidentiality, but was given assurances about the scope of the study; it was presented as an investigation into knowledge sharing, using Vickers’s notions of appreciation, with the data remaining confidential to the researcher. All participants engaged on this basis. They were not informed about the detail of the method, in case this altered their engagement, so were unaware of the aspects which look at relationships and authority. However two of the participants subsequently attended AIM workshops. The implications of this are examined in stage two.

A question posed by the PEArL framework is whether non-participants or transitory participants can be included in the study at a later stage. The sensitive nature of the work done in the organization made informal contact with non-participants impossible. If more participants had been identified, their inclusion would have needed to be mediated via the participating managers.

5.3.2 Timetable for the study

In initial discussions with the gatekeeper, it was estimated that the study would require the total estimated time of 8 hours, for all participants; this low time commitment was a factor in the manager agreeing to the study. The staff were to be involved all stages: Stage One was estimated to require individual meetings lasting approximately 15 minutes; Stage Two, individual meetings of 20 minutes; and for Stage Three, to be run as a plenary session, a duration of 30 minutes.

A timetable was proposed (Appendix E); how closely it could be adhered to would depend on availability of the staff and the possible requirement for security clearance for the researchers. The elapsed time of study was proposed as twelve weeks. A preliminary meeting was held to brief the participants about their involvement.
5.4 Conducting the study

In the study, Appreciative Inquiry Method (AIM) was used to explore the question

“What are the issues around knowledge sharing in [the organization]?”

The PEArL framework was used, as in the pilot studies, when considering elements of the study, to promote the authenticity needed to demonstrate the study’s rigour.

Participants were to engage in a series of meetings with the research question as the topic. The role of the researcher was first to elicit ideas, then to present them in the various diagrammatic forms, to stimulate discussion amongst the participants (the diagrams are not the end product, but are the researcher’s understanding of the participants’ views, expressed in a way which facilitates further discussion). The method posits shared appreciation arising from this discussion. At the same time, observations were of the inter-relations between the participants during the discussions, to intuit power relationships which could influence the shared appreciation.

5.4.1 The process

Stage One of the method consists of brief meetings with each participant individually, where they are shown how to draw a system map, then asked to create one based on the question.

In Stage Two of the method, a composite map is prepared by the researcher, taking care to include only those subsystems raised by the participants. This composite is checked with the participants in another series of individual meetings, resulting in a final composite map. At this stage, the participants are reflecting on the situation as it ought to be.

The next parts of the method require the participants to consider what ought to be, and the material developed aimed to facilitate this. The CATWOE mnemonic can be used to test root definitions for each of the subsystems on the composite map. These are to be discussed in a plenary meeting and any changes proposed and defended by the participants are made. At this stage, the participants are moving from describing their current situation to discussing what ought to be happening – exposing norms and values and developing their shared Appreciation of knowledge sharing in the organization.

For Stage Three, a second plenary meeting is held, involving all participants, where activity models produced from the revised root definitions are discussed. In this meeting, the participants take charge of the process, selecting those areas which were of most interest to them. They continue to develop their shared understanding, which can be used after the study to determine feasible actions for change. The study concludes once this cycle of enquiry is complete.
5.4.2 Logistical influences on the conduct of the study

Availability of the participants for individual and plenary meetings was a factor influencing the conduct of the study and the type of interactions possible. The sponsorship of the manager, A, gave the researcher an action warrant to arrange the meetings, but the need to determine when participants would be at the site and to have access to the booking system meant that meetings were initially arranged by C. Meetings had to be arranged in advance and visitors escorted. Access was constrained by the secure nature of the site and the fact that three of the participants (A, D & E) were not on site full time. E was based at the site but travelled regularly to other sites. A was based at the site part time, and D spent his time travelling, being a hitherto infrequent visitor to the site; he combined his visits with “team” sessions at the site. Both A and D anticipated spending more time at the site in the near future, due to the closure of another of the organization’s facilities.

Some lessons were drawn from the pilot studies, relating to the mode of the meetings (one-to-one or plenary) and the balance to be struck between the promise of a low time commitment and time to allow richness of the ideas to emerge from discussion. The stage one meetings and the meetings to discuss the composite map were to be with individuals. The remaining meetings were to be in plenary, as far as possible. All meetings were scheduled in meeting rooms at the organization, with the exception of two individual meetings at a later stage with A, which took place in a meeting room at the researcher’s place of work, for A’s convenience. From the researcher’s perspective, these were neutral spaces. There were occasions when there was a sizeable time gap between meetings, due to the availability of the participants. AIM studies run elsewhere at the same time adopted a workshop model, where all stages (after the initial system map) were discussed in plenary in one day. The different approaches are discussed in para. 6.6.4.

The times and dates of the meetings were at the discretion of the participants, and the researcher was reliant on them to book meeting rooms. It was a measure of their willingness to engage that this was not a problem in the study. Had the participants not been willing to accommodate meetings or to contribute, the researcher did not have the authority to insist on this. During initialization, authority exercised among the participants and the relationships between them was not clear, apart from the fact that A and D were more senior in the organization.

5.5 Analysis and reflection

Although the method requires that the researcher’s interpretations are authenticated by the participants, stating one’s own position at the start of the study acts to make the researcher mindful of the lens through which she may interpret the participants’ discussions; her readiness to notice and her sense-making. The researcher’s initial position was that knowledge could be
most usefully defined as “knowledge-as-practice” (p.9) and was interested the issues affecting this in the organization. The researcher acted as a reflexive practitioner, who analysed the material provided in the meeting to re-present it to the participants, for authentication and so that they could use it as an agenda for creating shared Appreciation. In a double-loop learning exercise, the researcher also reflected on the process, to gain an Appreciation not only of the research issue, but also of the use of the method: what she and the participants were learning about it. The PEArL framework was to be used throughout the study, to assist reflection during initialization, to help structure sessions with the participants as part of reflexive practice, and to contribute to the authentication of the study once it has concluded. These activities are discussed in Chapter Seven. Aside from the question on which the participants are asked to reflect, there was to be no prior or researcher-led direction; the participants were free to formulate their own Appreciation of knowledge sharing in the context of their organization. Figure 5.3 shows the cycle of learning.

Figure 5.3: Researcher’s cycle of learning (Stowell, 2013)
6.1 Introduction

In this chapter, the conduct of the field study using the Appreciative Inquiry Method is discussed in detail. The chapter is structured chronologically, with each section reviewed according to the guidelines provided both by PEArL and action research practice, as discussed in the method chapter. This presentation of a series of actions and reflections follows the path of Champion (2001) and Cooray (2010), where reflexive practice allows for insights both during the conduct of the field study and in reflection once it has been concluded, and for carrying lessons from one stage of the study forward to the next.

More formal reflections on the study outcomes follow in Chapters Seven and Eight. In the first, the use of AIM during the study is examined, including a section on how the circumstances of its use might lead to its evolution (methodological considerations). In the second, the findings relating to knowledge sharing itself are compared with the literature (knowledge sharing reflections).

The study was carried out over a period of five months, representing one cycle of enquiry in this organization, although for the researcher it represents a fourth cycle of enquiry for learning about the method. Appendix E shows the dates and durations of the meetings. Appendix F shows the system maps. Appendix G shows how the root definitions are tested. Appendix H gives the activity models.

6.2 Stage One – Expressing Need

A series of one-to-one meetings were held between the researcher and the participants, to produce the individual system maps (Appendix F). The question posed was: “What are the issues around knowledge sharing in [the organization]”. These meetings were held at the organization, with the exception of that with A, which was held at the researcher’s workplace.

All the participants drew the maps in under ten minutes. The researcher remained silent to allow them to do this and observed their concentration; it was clear that they were devoting much thought to the question. Once each map had been produced, the researcher discussed it with the participant to check for legibility and to clarify any ambiguity.

The responses to the question varied considerably. Participant B’s contribution consisted of five subsystems, addressing the problem at a high level and concentrating on the technology used to share knowledge, together with the cultural norms for using the technology, and the need to
realise (in the sense of be aware of) others’ interests. Participant C’s issues were more practical: for her the main issue was tacit knowledge, and concerns were how knowledge was shared and with whom.

Participant E’s contribution was in great detail, consisting of 23 subsystems, many interrelated, to do with the motivations to share, logistical problems, timeliness and accessibility of knowledge. The impression gained by the researcher was that E was embedded in the knowledge culture of the organization and had strong opinions about the issues.

Participant A had had some experience with the method, having attended an AIM workshop previously. A took a shorter time to complete the system map, identifying 12 subsystems, many of which were at a strategic level: the lack of funding to document work properly, inadequacies of the knowledge sharing mechanisms, not knowing who possessed or needed knowledge, lack of knowledge of the external environment. Being the gatekeeper for the study, he had possibly had a change to think about the issues beforehand or being in a role where the issues were at the forefront of his mind. When the researcher went through the map to check legibility afterwards, A enlarged on each subsystem as though he were being interviewed. This was useful in that it allowed the researcher to understand more the context of the situation of interest.

Participant D, as Knowledge Services head, was an occasional visitor to the organization’s site, and was the last person to be interviewed in this phase. He also spent the longest time drawing the system map, indicating that he could have added more in addition to the 19 interconnected ones. His subsystems identified use of IT and related tools, a lack of understanding of the difference between information and knowledge, a “need to know” culture countering knowledge sharing initiatives, and attitudes of the scientists to knowledge recording as the main issues. Once the map had been produced, he discussed his position and responsibilities and the successes the department had had in promulgating processes for knowledge sharing, by direct involvement with the operating departments.

At no point in this initial set of meetings was the meaning of the word “knowledge” questioned, although some participants included tacit knowledge as one of the issues to be explored.

In the individual system maps, the participants were identifying strategic and logistical problems with knowledge sharing, many of which had an as-yet unarticulated power dimension. For example, participants A and D spoke about the requirement, imposed by the fund holders, to integrate knowledge rather than generate it, and to package it for the customer. The subsystems they identified showed the problems servicing this requirement.
What are the issues around knowledge sharing in the organization?
6.3 Stage Two – Clarifying Need: The composite map and root definitions

6.3.1 Preparation of the composite map

A composite map was prepared by the researcher, using the individual system maps as source material. A series of possibilities were considered during the consolidation, based on the researcher’s growing understanding of the issue from the initial part of the cycle of learning. A first attempt identified: security; tools; finance, organizational culture; characteristics of knowledge; efficiency of current knowledge sharing practice. Although it was possible to group the individual subsystems under these headings, they were not informative enough to be used as subsystems in themselves. A second attempt was too specific (Figure 6.1 – Composite map):

A third attempt at organizing the subsystems involved amalgamating some of these points and discarding others as too general or not relevant; for example, the categories: logistical concerns, organizational culture were too broad. Several subsystems could affect other subsystems; the silos of activity resulting from the “need to know” culture leads to separate networks, lack of appreciation of what is being done in different parts of the organization and therefore duplication of effort.

Figure 6.2: Composite map presented to participants

The multitude of issues presented was consolidated into twelve subsystems (Figure 6.2). Initially this was felt to be too large a number to be practicable when taking the study further; the
participants were limited in the amount of time they could give. As the subsystems in the individual maps were wide ranging, the researcher wanted to put the decision about which subsystems should be included in the composite map into the hands of the participants. The purpose of the composite map was to present the researcher’s understanding of the system maps for the participants to authenticate. The researcher considered whether it was appropriate to look ahead to the possibility of creating root definitions from the subsystems, to check their quality at this stage.

6.3.2 Composite map review.

The next stage was to ask the participants to authenticate the composite map, to encourage a shared consideration of the issues and to start to develop ideas about what ought to happen (rather than what was the existing case). The participants were also to select a subsystem or subsystems for the next stage. The meetings were also an opportunity for them to start to appreciate the different ways in which knowledge could be interpreted in their context, and how this Appreciation could be used to improve knowledge sharing.

At this point, the researcher considered how the meeting logistics conformed to AIM practices (see Chapter Four). It was not possible to bring the participants together in a workshop format in the time-frame but as participants B and C are co-located, the researcher experimented with interviewing them together, to enact on a small scale the workshop format. The potential advantage would be an earlier opportunity for the participants to discover each others’ Appreciation of the question. Due to availability problems, the remaining participants were interviewed separately. The researcher considered what would happen if there was no agreement on the subsystems to be included in the final composite map. Either a further round of meetings would be needed to reach agreement, not viable under the time constraints, or a decision would be made by a majority of the participants – which would introduce further questions about the power exercised in the situation. This remains a potential problem with the individual interview route.

The researcher sent participants B and C the first draft composite map by e-mail ahead of the meeting. The purpose of this was to give them more time to think about the issues, and possibly to discuss ahead of the meeting, reducing the meeting time. There were three possible disadvantages of doing this. The first was that the researcher would lose sight of the interactions between the participants as they started to move towards a shared appreciation. The second was that it increased the engagement time of the participants, when they had been persuaded to take part on the basis of low time commitment. The third was that by treating participants B and C as a subgroup, it was implied that their individual points of view were not as important. In the event, these issues were not problematical; from the evidence of the meeting, the participants have a
good working relationship and share many views.

The proposed format of the meeting was as follows. By asking the participants to reflect on aspects of the situation as it is, and as it ought to be, the researcher followed Cooray’s (2010) use of PEArL (although the participants would not necessarily be able to comment on informal aspects of “relationship” which would emerge in the situation as it ought to be). The participants were to be asked to:

- check and comment on the composite map
- indicate the subsystems which were most relevant or important to their understanding of knowledge sharing in the organisation. The number to be limited to two (for time reasons). If they could give some indication why the other subsystems should not be considered in the current cycle of enquiry, that would be useful
- for each relevant subsystem, describe the situation as it is
- for each relevant subsystem, talk about what the situation ought to be, thinking about:
  - who should be involved and why (P)
  - how they should be involved, what they should be doing (E)
  - who is in control, who gives permission for action (A)
  - what relation do the actors have with the power holder, who influences action in the situation, planned relationships (r)
  - what might those involved learn, what appreciations do they need to come to, how would decision-making progress (L)
- attempt a definition of knowledge in their context

This was an ambitious agenda, and was followed with varying degrees of closeness in the meetings. Some of the points were deduced by the researcher rather than explicitly stated by the participant(s) – this is indicated where it happened.

6.3.3 Conduct of the composite map review meetings

In the meeting with participants B and C, they asked what was meant by “Address issues around generating knowledge” and indicated that “Benefits of sharing” and “Address problems arising from network separateness” could be treated as one subsystem. Participant B identified “Capture tacit knowledge” and “Provide succession planning” as relevant subsystems; participant C identified “Improve opportunities to determine what knowledge is available”. Each of these subsystems was considered in turn, from the “is” and “ought” standpoints.

“Improve opportunities to determine what knowledge is available”. The Weltanschauungen of both B and C were apparent when discussing this subsystem; both belonging to the Knowledge Services department, their view was coloured by their working practices and initiatives. Participant C, as librarian, had clear opinions about the issues and what should be done. Her comments combined what they do now (“is”) and ideas about improving their practice (“ought”):
• “Finding out” roles: Being clear about what knowledge the organization has. Bringing the science and technology knowledge into the Knowledge Services collection, tracking down other collections and bring them in. Building up knowledge about who to contact when a task comes in, and the logistics of maintaining this knowledge, possibly in a database.

• Persuading people to share their knowledge more (in her view, this goes against the culture).

• As part of this, being clear about the cost of not sharing – falling behind industry and academia practice.

Her Weltanschauung appeared to be: “We want to know everything”, relating to the science and technology knowledge within the organization rather than business intelligence, which B mentioned as also important. Who should be involved, who had the power and the relationships with the power holder were left vague, with a reference to “Corporate Memory”.

“Capture tacit knowledge”. More light was shed on the knowledge sharing mechanisms already in place (communities of practice, wikis, symposia) and their shortcomings. Participant B initiated a discussion about the meaning of knowledge in the organization, and the difference between information and knowledge: in his view, information was contained in formal reports, databases and the collection of reports. Knowledge was the practice of exploiting the material in the reports, developing new understanding, sharing subject expert understandings. His Weltanschauung appeared to be that definitions of these terms commonly agreed in his department needed to be more widely known. On tacit knowledge, he believed it was knowledge that was hard to communicate, that could not be written down. His further comments were related to the practical difficulties of bring to the surface tacit knowledge, due to its not being considered important to record, or misconception about how to use sharing mechanisms, or the project-driven (therefore budget-limited) nature of knowledge generation within the organization. To move from “is” to “ought” here, both B and C believed that the sharing of tacit knowledge should be budgeted for in each project, and that time should be set aside each week for this sharing, as happens in their group. Their views on who would be responsible for making this happen were again vague, with the Chief Technology Officer (CTO) (responsible for overall knowledge management), heads of departments, subject experts and fellows all being mentioned.

“Provide succession planning”. Participants B and C described current mechanisms for sharing knowledge in the library group, and for transferring knowledge when a subject expert leaves. They felt that the efficiency of this transfer could be improved by better metrics to measure how well this could be done; they seemed unaware of the disconnection between this view and their earlier discussions about the elusiveness of tacit knowledge. This is also illustrated by their stated “need for an interactions database”. Again, responsibility was to be in the hands of the CTO.
Greater clarity was achieved on the boundary for the enquiry; this is not based on the organizational structure but is about knowledge sharing activities. The boundary between the providers and facilitators and the ultimate clients is clear also.

In the meeting with participant E, he highlighted five subsystems of significance, of which the first two were discussed in more detail (due to time constraints):

- Realise/justify the benefits of sharing knowledge
- Provide succession planning
- Be aware of knowledge currency/timeliness
- Address problems arising from knowledge ownership practice
- Address problems arising from separation of networks, security needs

“Realise/justify the benefits of sharing knowledge”. Participant E’s position was that people are rewarded for originality, rather than for sharing, finding or using knowledge. Although the organization’s policy is to exploit knowledge generated in a project, this is rarely followed up and the movement of personnel between roles means both that knowledge exploitation is not as efficient as it could be and that accountability is not easy to trace. He believed that the organizational culture was risk-averse, and that this was encouraged by the intolerance of mistakes displayed by stakeholders outside the organisation. The attitude to knowledge is reductionist, with a culture amongst customers of wanting answers straight away, and knowledge generators complying. He felt that, with generation of new knowledge being privileged, the benefits of sharing existing knowledge were not easy to assess or made clear, although existing repositories worked well.

His solution (the “ought”) was for the organization to promote a no-blame culture where mistakes were not unduly punished, and to achieve this, an easy-to-grasp rationale promoted, where people are allowed to make judgements, supported by common-sense, and a sense that the risk could not be passed on. Participant E appeared to be arguing for a change to the organizational culture, promulgated from the top, and believed that this culture change could be problematic.

“Provide succession planning”. When discussing this subsystem, participant E attempted a definition of knowledge in the organizational context: “applying what one knows, knowing what is not relevant, when to break rules”. He enlarged on this: knowledge is passed on by learning and interaction, and described programmes within the organization set up for skills transfer, involving mentoring, 360 degree review, reflection on knowledge characteristics and contacts with higher management. He perceived problems with succession planning:

- the difficulty of matching someone of experience with a project which allows learning of
the knowledge in the time available, for the utilization figure available: “it is challenging finding paid work to allow for knowledge transfer”

- the “you are supposed to know” culture, which personalised failure and led people to conceal lack of knowledge
- the tendency to blame technical problems when lack of communication skills on the part of the expert were a more likely cause of failure
- the dispersed nature of responsibility because of the matrix management structure of the organization, compounded by the involvement of contractors, whose interest was to keep knowledge and sell it on

Participant E’s suggestions for the “ought” in this case were to the point. First, an understanding in the organisation that some failure resulted from the inadequacy of succession planning. Succession planning procedures could clarify responsibilities for knowledge ownership, and have procedures for keeping technical specifications up to date. He viewed money as an incentivizer and talked about both rewarding appropriately the person who was to pass on his/her knowledge and making them accountable for doing so.

Participant E’s Weltanschauung appeared to be that of a practitioner, who had direct experience of the issues and who had thought about the cultural and motivational aspects, able to appreciate the positive aspects as well as the problematic. Ideas about responsibility for action were deduced from his comments rather than being addressed specifically in the meeting. This was because of the time taken in the previous meeting. Again, the meeting with participant E, having been scheduled for 15 minutes, actually took just under an hour. In this meeting, E’s relationship with other participants started to become clear; he had been proposed as a participant by participant A on the strength of his ideas, and this opinion was mutual, E considering A to be a good strategic thinker, able to take action to influence his own department’s working practice.

The next participant to be interviewed was participant D, who came to the site for the meeting, and to meet with his staff based at the site. His view was that many subsystems on the composite map were interlinked: “Improve opportunities to determine what knowledge is available” and “Increase awareness of who has/needs knowledge” should be considered as one subsystem, with “Realise/justify the benefits of sharing knowledge” as a related subsystem. Equally, “Address problems arising from knowledge ownership practice” and “Address problems arising from the separation of networks, security needs” were also linked. “Capture tacit knowledge” and “Provide succession planning” were linked. On “distinguishing between information and knowledge”, participant D thought that the semantics were not important to people on a day-to-day level, but that an understanding of the difference between the two was required in order that information exploitation could be moved to the knowledge layer. He also commented that all the
issues were already subject to initiatives to improve them, with strategy documents sent to the Executive Board for consideration.

Participant D reflected on the subsystems “Improve opportunities to determine what knowledge is available” and “Address problems arising from knowledge ownership practice”. He strongly disagreed that the latter was a problem, with data collections available to all employees and the question of intellectual property designed out by the organizational structure. The current situation was as much about people’s perceptions as about knowledge sharing practice: he believed that people should be motivated to share by being exposed more to the organization’s business needs. His view of his “customers” was that they were responsible for any remaining knowledge sharing problems they had; individuals were generally able to find and use knowledge, but were not so good at innovating with knowledge or disseminating it, that there was room for improvement in knowledge management and exploitation.

His view was that his strategies were addressing this “ought” in a number of ways. On the operational front, activities included: documenting people’s science and technology experience (as part of projects); identifying data repositories in the organization and making them available using mediated searches. More importantly for him, the employee motivation to share and exploit knowledge was to be addressed by a three-strand approach, facilitated by funding:

- Education and training, with structures set up to make knowledge easy to find in a timely fashion, and to increase the transparency of resources.
- Behaviour modification; changing the culture of the organization to one of openness to sharing, for example by providing good communicators from his department to the operating departments as departmental points of contact. He recognised that this cultural change was more difficult to achieve.
- A mixture of persuasion and coercion to implement the strategy.

Participant D’s manner throughout the 40-minute meeting was one of establishing dominance. His Weltanschauung seemed directed at emphasising his credentials and credibility in knowledge sharing, and towards initiatives he had already put in place to address the issues. He had stated that in his role as the senior manager in Knowledge Services, he had to renegotiate and justify his department’s funding annually. The researcher reflected that he appeared to exercise an “authority” commodity of power to control the study, which could affect his position if the findings were promulgated. The strategy documents he referred to aimed to build resilience when bidding for funding. Of all the participants, D had the most political understanding of the situation.

The final meeting examining the composite map was with participant A, at the researcher’s site.
A had recently participated in an AIM workshop and was familiar with the format. Subsystems of particular interest to him were:

- “Distinguish between information and knowledge”
- “Improve opportunities to determine what knowledge is available”
- “Make decision takers/funders aware of the impact of knowledge sharing issues”

He regarded “Address problems arising from separateness, security needs” as nuisance only, but later identified “Capture tacit knowledge” as worth considering.

A’s most pressing concern was with the subsystem “Make decision takers/funders aware of the impact of knowledge sharing issues”. He commented on the pressure from clients to produce results-only work, more quickly and cheaply, and their lack of interest in, or understanding of, the underlying science. He pointed out the consequences: an unwillingness on the part of fundholders to pay for the documentation of methodologies and findings, the competitive pressure to keep costs down, and the loss of knowledge, meaning that similar work in the future has to be repeated to regenerate it, at greater expense. A related issue is maintaining the knowledge base amongst the staff. Despite the organization’s Systems Maturity Model, which identifies a range of expertise amongst staff (from “aware” to “expert”), his department contains unsupervised practitioners and experts who are expected to give credible answers, and who may be subject to independent scrutiny on large projects. His solution (“ought”) was the need to make the economic argument that it is more expensive to regenerate knowledge, and to direct it at more senior levels within the organization and the client organizations. It was implied that managers at his level should be responsible for this.

Participant A commented on the subsystem “Distinguish between information and knowledge”. He described interactions with the Knowledge Services department in the provision and use of information systems, databases and report catalogues. However he believes that the internalisation of information and its application, its “in-head” quality, is what defines knowledge; a report will summarise the results of a scientific trial, but if the trial is to be repeated, one has to consult those who carried it out. Information, rather than knowledge, is what is supplied by the Knowledge Services department. A talked about the way complex problems were approached: not only was a literature review required, but one needed to know who had expertise in the topic, how a team could be brought together and who was appropriate to talk to outside the organization. The business environment also had an impact: much of the business they tender for is on a competitive basis with other (possibly Europe-wide) institutions. Therefore, it seems that although scientific and technical knowledge is the core product, “knowledge” about how to manage the business process is increasingly important. There was an interesting link between this view and D’s thoughts on the need to change information into knowledge through exploitation.
The corollary of this view is that distinguishing between information and knowledge matters in succession planning. Mechanisms exist for staff to pass on knowledge via seminars, workshops and training, and by shadowing by “apprentice” staff, but other factors can reduce the perceived need for this: a recently departed expert is still available because they have his contact details, and some return to work for the department as contractors.

Participant A was asked about the “ought” for this subsystem. His belief was that the organization needed a new initiative to grow a technical consultancy, developing training and facilitation skills, and discussion of issues at the client “footplate” to work out knowledge requirements. The responsibility for this appears to lie outside his remit, or that of the boundary to the knowledge sharing study. His department was experimenting with using social media to manage their own knowledge network (in terms described above); he wondered about extending this beyond the organization.

“Improve opportunities to determine what knowledge is available”. Participant A discussed the existing initiatives for sharing knowledge, giving as example how the use of systems nomenclature in departments leads to identification of synergies and possibilities of virtual communities. The organizational intranet has collections of system resources which can be used by Communities of Specialist Practice, together with (funded) forums, guest material, training opportunities and reading. Global e-mail can be used, once permission has been sought, to publicise matters and a weekly e-journal gives details of monthly speakers. A’s contribution to “ought” here focused on area where this could be made more efficient: more activity content or community management; continuing professional development; encouragement to staff to initiate, join and participate in communities of practice; use of RSS feeds to show what is new. Participant A was not specific about who should take on responsibility for these improvements, but a commitment from all concerned would be indicated.

Participant A’s Weltanschauung appeared to be that effective knowledge sharing was essential to his operating department and to the company as a whole, and that he had the authority to explore new ways of achieving it. Although he did not fully articulate a definition of knowledge at this point, the researcher deduced that it was to do with practice and communication, and that this was vulnerable to influences both within and outside the organization.

6.3.4 Researcher reflections on the composite map review stage

Table 6.1 shows the participants’ choice of relevant subsystems, which appeared to be a function of their perspectives on their role in the organization and on their responsibilities.
Table 6.1: Relevant subsystems selected by participants

<table>
<thead>
<tr>
<th>Participant(s)</th>
<th>Relevant subsystem</th>
</tr>
</thead>
<tbody>
<tr>
<td>A,B,C,D,E</td>
<td>Improve opportunities to determine what knowledge is available</td>
</tr>
<tr>
<td>B,C,(D)</td>
<td>Capture tacit knowledge</td>
</tr>
<tr>
<td>B,C,E</td>
<td>Provide succession planning</td>
</tr>
<tr>
<td>E</td>
<td>Realise/justify the benefits of sharing knowledge</td>
</tr>
<tr>
<td>D</td>
<td>Address problems arising from knowledge ownership practice</td>
</tr>
<tr>
<td>A</td>
<td>Make decision takers/funders aware of the impact of knowledge sharing issues</td>
</tr>
<tr>
<td>A</td>
<td>Distinguish between information and knowledge</td>
</tr>
</tbody>
</table>

The participants’ views on the relevant subsystems complemented and occasionally contradicted each other. This is a characteristic of individual sessions. On the one hand, it is possible to achieve a rich sense of a participant’s views, without interruption or power relations intervening; on the other hand, as further meetings at this stage are not scheduled, discussions as a group have to be deferred to a subsequent stage, reducing the opportunity available to achieve shared Appreciation.

As examples of orthogonal views, for the subsystem “Distinguishing between information and knowledge”, A considered that the problem stems from a difference in the world view between clients and scientists – the former want the answer as information, the latter want to capture knowledge for subsequent work. One the other hand, from his experience in Knowledge Services, participant D thought that knowing the difference between the two (semantically) doesn’t matter to employees on a day-to-day level. For the subsystem “Improve opportunities to determine what knowledge is available”, the participants were in broad agreement, from differing points of view: participants B and C believed that staff could be persuaded to share knowledge by being shown the cost of not sharing; D shared this view, stated that strategies exist, and focused on motivations to exploit knowledge. Participant A focused more on making existing mechanisms more efficient, whereas E believed that more intrinsic motivation and protection from consequences of error were needed. These views were discussed in plenary at the root definition stage.

The composite map was revised, taking into account the subsystems which the participants thought particularly relevant; Figure 6.3 shows the map taken forward to the next stage. At this point, following the discussions with the participants, the subsystems reflect the “ought”.

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The subsystem “Make decision makers/funders aware of the benefits of sharing knowledge effectively” is an amalgamation of “Make decision makers/funders aware of the impact of KS issues” and “Justify the benefits of sharing knowledge” from the first version of the composite map. The subsystem “Improve effectiveness of current knowledge sharing practice” now incorporates “Be aware of knowledge currency/timeliness”. “Address issues around generating knowledge” was felt to be too general to be useful and was removed from the map.

6.3.5 Root definitions

Although Cooray’s (2010) perspective on the PEARL framework was used to structure interactions with the participants, the “is” and “ought” aspects could also be viewed through the lens of CATWOE (Checkland, 1981), to add richness to the Appreciation of the issues. In the later version of AIM, T (Transformation) and W (Weltanschauung) were identified as being most useful in sessions with the participants. By developing root definitions and asking participants to comment on them in a plenary session, it was hoped that a Weltanschauung for each subsystem considered could be developed, and the Transformation more adequately identified. The concepts of Transformation and Weltanschauung, with T representing the transition from “is” to “ought” and W representing the world view relating to the root definition, were used to develop the participants’ growing shared Appreciation of the issues.

The researcher formulated root definitions for all the subsystems in the revised composite map, using the CATWOE mnemonic. Checkland’s advice was followed: the root definition is formatted as “A system to do X, by Y to achieve Z”, and the criteria of efficacy (does the means work?)
efficiency (best use of resources) and effectiveness (meeting the longer term aim) were applied. As the subsystems already showed the “ought”, the root definitions were determined not as solutions to the issues, but to find out what the subsystem meant. Appendix G shows how the root definitions were tested.

To summarise, the root definitions developed by the researcher are shown in Table 6.2:

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Initial root definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide succession planning</td>
<td>Arrange for the effective transfer of expertise owned by those leaving the organization to remaining staff and repositories so that useful, relevant knowledge is maintained within the organization.</td>
</tr>
<tr>
<td>Improve the capture of tacit knowledge</td>
<td>Improve the process of converting tacit knowledge to implicit knowledge as a means of increasing understanding amongst the organization’s staff and the efficiency of work on projects.</td>
</tr>
<tr>
<td>Distinguish between information and knowledge</td>
<td>Distinguish between information and knowledge in the organization, encouraging staff to see the benefits of doing this as a means of improving the efficacy, efficiency and effectiveness of work outcomes.</td>
</tr>
<tr>
<td>Reduce barriers to knowledge sharing</td>
<td>Increase the understanding of the organization’s staff of how barriers in the organization resulting from the “need to know” culture can be mitigated as a means of improving the sharing of knowledge.</td>
</tr>
<tr>
<td>Improve opportunities to determine who has knowledge and who needs it</td>
<td>Improve existing mechanisms to increase shared awareness of who has knowledge relevant to those working on specific projects, as a means of improving the effectiveness of project outcomes.</td>
</tr>
<tr>
<td>Make decision makers/funders aware of the benefits of sharing knowledge effectively</td>
<td>Increase budget holders’ understanding of the benefits of knowledge sharing relating to cost and maintenance of expertise, so that they make informed decisions when funding projects.</td>
</tr>
<tr>
<td>Improve effectiveness of current knowledge sharing practice</td>
<td>Act to increase staff understanding and use of mechanisms for knowledge sharing as a means of making processes to share knowledge more effective.</td>
</tr>
</tbody>
</table>

A further meeting was set up, this time in plenary, to allow the participants to view and reflect on the root definitions. A meeting in plenary at this stage is a departure from the previous AIM studies, although it has been adopted with success in AIM workshops, used for training organizations in the use of AIM. This form of meeting was chosen for a number of reasons. First, it would give the participants the opportunity to discuss the root definitions, starting to develop a
shared Appreciation of the issues. This would less time consuming and more logistically possible than a series of individual meetings, where points raised would have to be cross-checked in subsequent meetings with the participants. Secondly, it would give the researcher the opportunity to observe interactions amongst the participants, allowing insights about power relations in the group which might influence their shared understanding.

The participants were sent the revised composite map for comment along with the invitation. All participants attended with the exception of participant A, whose contribution is discussed later; this was the first time they had met together formally for the study and the researcher was able to observe the relationships and possible power structures between the participants.

The format of the meeting was as follows:

- Present revised composite map and discuss comments.
- Present each subsystem in turn, with its root definition.
- Record changes to the root definition arising from discussion.

A separate meeting was later held with participant A, at the researcher’s work place, to discuss his views on the root definitions, as revised by the other participants. To improve the sense of the revised root definitions, his comments are incorporated, but it should be remembered that at this stage the other participants did not have the opportunity to challenge his views. The participants engaged fully with the process, devoting more time than scheduled; participant E reorganized his diary so that he could stay in the meeting.

6.3.5.1 Make decision makers/funders aware of the benefits of sharing knowledge effectively

Participant D considered this to be the most important subsystem and the other participants were prepared to follow his lead. Here he appeared to be exercising a commodity of power (Stowell, 1989): formal power as manager of two of the other participants and as the senior figure in the meeting, and informal power in that he appeared to have a position to defend. His interest in this root definition was a consequence of his position, which gave him access to the issues; the organization’s operation was dictated to a large extent by the main client’s policies (for example in IT acquisition). He placed a premium on setting up a culture of sharing, and of giving budget holders qualitative examples and quantitative data for decision making. The other participants enlarged on this, using ideas they had first expressed in the stage one interviews: E mentioned opportunities to share knowledge in a timely fashion and letting budget holders know the consequence of not sharing. Different perceptions of the value of the organization’s scientific and technical information were discussed; a consensus was that the budget holders did not value scientific and technological knowledge to the extent needed, i.e. they did not appreciate the need to maintain it to keep the organization competitive. The organization’s remit and whether it should be competitive (or whether its functions should be dispersed) was a political decision
outside the boundary of this study, discussed further in the root definition meeting with participant A. In a subsequent discussion with A, he commented that words such as “benefit” and “value” have particular meanings in the organization; benefit has financial and non-financial connotations. He preferred the use of “value”, although it is equally loaded with organization-specific meaning. He also questioned the unit of analysis in determining who has expertise. Either individuals or the organization could be considered; people definitely have expertise, but is there value in treating the organization as an aggregate of people or an emergent entity in its own right? The answer to this will depend on the perspective of the decision maker.

The revised root definition focused on scientific and technical knowledge:

“Ensure the cost and value of maintaining [the organization’s] science and technology research expertise, including all published work, is understood by decision makers at every stage of the project life cycle”.

The reference to “every stage in the project life cycle” was meant to include all staff involved, from the budget holders to the staff working on the project, and the clients receiving the results of the project. Published work was included as tangible evidence of the organization’s knowledge, which needed to be documented fully for most effective use in the future.

6.3.5.2 Distinguish between information and knowledge

In the discussion about this root definition, the participants did not articulate either clearly in the context of the organization, and from their contributions were more interested in the practical consequences of using the terms than the definitions themselves. Participant B stated that information management was needed to be able to do knowledge management. Participant D also discussed the meaning of “exploit”, in the context of the organization.

6.3.5.3 Improve opportunities to determine who has knowledge and who needs it

The central role of projects as a means of funding knowledge sharing was discussed. The participants again followed D’s lead in discussing how knowledge should be exploited. In this context, the meanings of words for the organization were clarified. “Customer” and “client” referred to different stakeholders of the organization. “Exploit” referred to capitalization on expertise, and applying existing knowledge in new situations (the importance of this to the organization is reflected in the name of the central Knowledge Services department).

The participants agreed on the revised root definition:

“Improve existing ‘mechanisms’ to increase shared awareness within the organization of who has knowledge which can be applied on specific ‘projects’ as a means of improving delivered outcomes”.

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This decoupled projects from outcomes, showing that outcomes covered a wider remit than projects. The substitution of ‘mechanism’ for ‘opportunity’ acknowledged the practices and systems already in place for the sharing of knowledge.

6.3.5.4 Reduce barriers to knowledge sharing

This proposed root definition prompted a discussion about motivations and reasons for not sharing knowledge. Amongst older staff, the “need to know” culture is strong. While participant C, as librarian, received many enquires, participant E remarked on the lack of incentive to nurture knowledge sharing, a point that he had made in the individual discussions. Participant A commented on how simple it was to restrict the release conditions for documents (“one box check”). The participants agreed on a revised definition:

“Increase the understanding of the staff of how to remove barriers in the organization resulting from the ‘need to know’ culture as a means of improving sharing of knowledge”.

This implied a greater degree of direction action than the original root definition, which referred to understanding how to mitigate, rather than to remove barriers.

6.3.5.5 Improve the capture of tacit knowledge

The discussion of this root definition centred around three aspects: what was meant by “tacit knowledge”; why it was important or useful to define it; and how far one should go in capturing it. The participants identified several different aspects to tacit knowledge, which appeared to illustrate their different Weltanschauungen. Tacit knowledge as applied to scientific and technical domains (and hence to be in the province of technical experts), could be defined as unreported work not lost to the future. Participant D enlarged on this to suggest that tacit knowledge could include non-reported work, for example, where failure had occurred; a problem for the organisation is that only success is reported. Participant E believed that if tacit knowledge were defined in these ways, it was not truly tacit: “tricks of the trade” can be written down, and failed work could be recorded if the right motivation were provided. Participant C commented that tacit knowledge related to experience – some mechanisms couldn’t be recorded, particularly the knowledge of how to handle the personalities in the organization.

The value of tacit knowledge to the organization was re-emphasised as part of these discussions, the participants returning to the discussion about ensuring that the value was made clear to the client, in order to allow for tacit knowledge maintenance in project budgets. The logistical and financial issues of capturing tacit knowledge were related to this perceived value. Participant D put it most boldly, stating that the information network was linked to value, and whether tacit knowledge was pursued depended on a cost–benefit analysis. Participant E reiterated to his views on motivation: a team’s recognition of the need to share was offset by there being neither
reward for recording failure, nor sanction for not preserving the knowledge.

The revised root definition was:

“Recognise the benefits of all forms of tacit knowledge and who has it and formulate ways of expressing it for the benefit of other staff”.

A later stated that “all forms” takes into account whether processes exist to capture tacit knowledge in its various manifestations. There was no opportunity to discuss this further at the activity model stage, due to time constraints.

6.3.5.6 Provide succession planning

Issues which emerged from discussion of this root definition included how to preserve knowledge which may not be needed now, but at a later date; how that knowledge can be most effectively transferred, and on the part to be played by Information Systems solutions. The topic was of great interest to participant A, who explored some of the detail, and in doing so, illuminated further what is seen as knowledge in the organization. An individual with knowledge can be redeployed to a separate part of the organization or can leave it altogether. The knowledge held includes not only technical expertise, but also contacts and social/professional network. Several existing mechanisms are currently used to elicit and transfer the knowledge: re-employment as a contractor; requesting presentations on the topics of expertise, e-holdings – redistributed and put in the organizations archives, job-shadowing. As the organization now works to integrate knowledge from many sources rather than merely to produce it, A’s department have experimented with a social networking tool, to build a list of scientific contacts.

The revised root definition was:

“Establish a culture with appropriate governance where expertise owned by staff is passed on to other staff and relevant repositories and is seen as being an important individual responsibility when leaving a specific role”.

6.3.5.7 Improve effectiveness of current knowledge sharing practice

The participants decided that this could be subsumed into the other subsystems. In the subsequent discussion with participant A, he believed that it should still be considered separately. He believed that the Knowledge Services department should adopt the same practice as the Operating departments, keeping up to date with best practice and promulgating knowledge. He indicated that the divide between these departments was a problem for knowledge sharing. He did not explicitly distinguish between the type of knowledge which Knowledge Services could be expected to share (possibly about knowledge sharing itself) and the scientific and technical knowledge with which the Operating departments deal, but he mentioned the organizational culture of impartiality and expertise. At the last plenary meeting, all the participants ascribed to
this culture.

The revised root definition following this meeting was:

“Act to increase staff understanding and use of mechanisms for best practice in knowledge sharing”.

The researcher tested the revised root definitions after the meeting using CATWOE (Appendix G) and the resulting root definitions are shown in Table 6.3.

**Table 6.3: Revised and tested root definitions following plenary meeting**

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Revised root definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide succession planning</td>
<td>Establish a culture with appropriate governance where expertise owned by staff is passed on to other staff and relevant repositories and is seen as being an important individual responsibility when leaving a specific role.</td>
</tr>
<tr>
<td>Improve the capture of tacit knowledge</td>
<td>Recognise the benefits of all forms of tacit knowledge and who has it and formulate ways of expressing it for the benefit of other staff.</td>
</tr>
<tr>
<td>Distinguish between information and knowledge</td>
<td>Put in place a culture where staff appreciate the difference between information and knowledge and exploit both to improve the efficacy, efficiency and effectiveness of work outcomes.</td>
</tr>
<tr>
<td>Reduce barriers to knowledge sharing</td>
<td>Increase the understanding of staff of how to remove barriers in the organization resulting from the “need to know” culture as a means of improving sharing of knowledge.</td>
</tr>
<tr>
<td>Improve opportunities to determine who has knowledge and who needs it</td>
<td>Improve existing “mechanisms” to increase shared awareness within the organization of who has knowledge which can be applied on specific “projects” as a means of improving delivered outcomes.</td>
</tr>
<tr>
<td>Make decision makers/funders aware of the benefits of sharing knowledge effectively</td>
<td>Ensure the cost and value of maintaining the organization’s science and technology research expertise, including all published work, is understood by decision makers at every stage of the project life cycle.</td>
</tr>
<tr>
<td>Improve effectiveness of current knowledge sharing practice</td>
<td>Act to increase staff understanding and use of mechanisms for best practice in knowledge sharing.</td>
</tr>
</tbody>
</table>
6.4 Stage Three – Representing Need: Activity Models

In this stage, the researcher developed activity models that were used as the agenda for discussion in a final plenary meeting with all the participants. This meeting was the final activity of the study, where the participants were closely observed to assess their shared Appreciation of knowledge sharing in the organization.

6.4.1 Development of activity models

The researcher developed activity models for each of the root definitions. Doing this, she was mindful that the activities in the model should be derived from the root definitions alone, not taking into account any background knowledge acquired during the study. The activity models are conceptual and represent the ideal, what “ought” to be the case, as defined by the participants in their development of the root definitions. The activity models are shown in Appendix H.

6.4.2 Plenary meeting

Plans were formulated for the plenary meeting. The agenda was to review the activity models, but that the main purpose of the models was to provide cues for discussion, so that the participants could arrive at a shared Appreciation of the issues they had raised, and some idea of how they could take their realisations forward. The format was:

- Show the participants the activity model for each root definition
- Encourage them to discuss the activities. The purpose of this is for them to decide on feasible outcomes from the model, and for the researcher to observe the interactions and the development of shared Appreciation or accommodation of the different perspectives.
- The researcher acts as a guide to the approach, rather than participating in discussion of the outcomes. Interjections are kept to the minimum, but we need them to think explicitly about: the Weltanschauungen for which the activity models apply; any measures of performance when monitoring outcomes.
- Change to the activity models to be incorporated only if the participants can defend them.
- Show them the overall combined model.

All participants, the researcher and the supervisor were present at the final plenary session. The time allocated to the meeting was adhered to, so the participants selected the activity models most interesting and relevant to them. The senior managers led this decision. The activity models which were discussed were for the root definitions:

- Make decision makers/funders aware of the benefits of sharing knowledge effectively (Figure 6.4)
- Improve opportunities to determine who has knowledge and who needs it (Figure 6.5)
The initial position of both participants A and D was that capability needed to be maintained, to ensure continued provision of service. Participant E agreed with this, explicitly stating that it was needed to justify the continued existence of the organization. Participants B and C were silent at this point; from their support for D’s perspective in previous meetings, and their line report to him, possibilities were that they also agreed, that they had no opinion but were willing to concur, or that they disagreed but felt silenced. There was no opportunity to distinguish which was the case.

The discussion broadened to talk about how capability could be maintained. The aspects discussed were: processes for maintaining current capability; deciding how to maintain non-current knowledge which would be used in the future (the most important aspect for participants A and D); examples of how capability could be maintained (through case work or research) in the face of an unfavourable financial situation. This diverged from the activity model, but was allowed to proceed as it revealed much about the participants’ standpoints.

Participant A focused on external clients and their requirement for “assured capability” (despite their perceived lack of willingness to pay for it), the matter complicated by the levels of decision maker (internally and externally), and the different stances taken towards knowledge generation (conducting research or collating outcomes). Participants C and D were more concerned with the ability to answer questions internally – the viability of their department depended on providing knowledge when needed, which was taken from the operating departments, and capability development was continually audited at Board level. Both A and D agreed that the Knowledge Services department has processes for maintaining capability. Participant B’s view, endorsed by A, was that there needed to be a balance between external client-facing and internal tasks, with priority given to the latter to ensure that they were carried out.

Turning to the process of capability development, further light was cast on the different perspectives of the participants. For Participant D, the processes are clear; for example pairing trainees with subject experts is an acknowledged practice. However, when looking at the detail of how this is done, D made reference to an “allocator”, and funding by the “client”, both of which were unpicked by the other participants. An allocator would need to have knowledge of subject experts; D, A and E confirmed that it is generally known who the expert is, but participant E’s view was more nuanced: how can the allocator know about “hidden” knowledge – the tacit knowledge. Currently, capability development is funded from a department’s training budget; funding from the client’s budget needed a case to be made. E’s view was that there were political issues and
Figure 6.4: Activity model for "Make decision makers/funders aware of the benefits of sharing knowledge effectively"

Root definition: Ensure the cost and value of maintaining the organization’s science and technology research expertise, including all published work, is understood by decision makers at every stage of the project life cycle.
issues of value here. It could be presented that it had to been funded or the risk of not maintaining it should be accepted, but the decision to fund externally would depend on demonstrating that the knowledge had value.

In discussing the cross-team sharing of knowledge, Participants A and D appeared to have different perspectives on the role of the Knowledge Services department. Participant D asserted that knowledge sharing has a mandate from senior management. In response to participant A’s questioning of the prevalence of sharing practice across departmental groups, and participant E’s doubts about the status Knowledge Services, D stated that most of his department’s work was mediating between groups to share knowledge and aggregating dissimilar items. Participant D believed that it facilitates problem solving rather than solving problems for departments – he appeared to be privileging organizational knowledge as a whole (under his remit) rather than the specialised knowledge developed in the operating departments. This was demonstrated by his assertion that, in a way, the operating departments work to provide Knowledge Services capability and that all departments ought to act as one in this. By contrast, participant A believed that the operating departments were better proponents of best practice, with Knowledge Services acting as a catalyst for sharing. It was suggested by participant E that part of the operating department budget should ring-fenced for knowledge services. It was apparent to the researcher that opinions differed on the remit and the efficacy of the Knowledge Services department. Literature searches (required at the start of projects) were considered as an example of where the respective responsibilities of KME and the operating departments lie. The operating departments are more likely to have the scientific and technical knowledge required, but participants C and D believed that the Knowledge Services department had better capability to perform a good literature search. Participants D and E agreed that there is an overlap in the work, due perhaps to an awareness of departmental silos at project manager level, and discussed how the situation could be improved by sharing literature search capability on the one hand and specialist knowledge on the other. For D, cross-department briefing should be considered.

In a discussion about factors that facilitate and prevent knowledge sharing, a number of initiatives were mentioned, together with scope for further efficiencies. These included maintenance of the library, recorded multimedia clips of subject experts and discussions with subject fellows. Participant C’s people-facing perspective was again revealed when she argued that the literature search should be complemented by seeing people. Participants A and D agreed that the role of the departmental point of contact (an individual from the Knowledge Services department, embedded in an operating department) could be extended. Participant E was apparently unaware of the processes available to help managers (such as A), although A and B confirmed they existed, and worked well for a small department. Participant B commented on staff awareness of
responsibility to share. From his perspective, existing mechanisms worked up to a point, but tacit knowledge, which in his view could include failed experiments, was not recorded. E and D commented on reports written to retain knowledge gained from a situation, but which were defensive, to disarm criticism.

Helping people to find value in the organization’s knowledge was relevant not only for clients but inside the organization also, and the participants discussed how this could be done, via knowledge sharing. In participant E’s view, improving effectiveness of knowledge sharing practices required activities to influence behaviour and all participants agreed that motivation was key. D suggested that personal reward at all levels should be considered as part of the mandated culture of sharing. He asserted the value of the Knowledge Services department and its activities, informed by (and exceeding) best practice (benchmarked by an external consultancy), using a Knowledge Management maturity model and validated by external bodies including the Knowledge Council.

The perspectives of the participants following this discussion became clearer to the researcher. Participants D and E are more aware of the precarious position of knowledge in the organization and for its clients, and the need for political support from senior management. Participant A is concerned with the establishment of best practice as part of his department’s scientific activities. Participants B and C regard matters from an operational perspective. Although it was unclear whether participants had influenced each others’ perspectives, it seemed to the researcher that they had gained a shared understanding of the importance, the difficulties and the logistical aspects of demonstrating the value of the knowledge provided by the organization.

The perspectives of the participants became clearer during the discussion of the second activity model, for the subsystem “Improve opportunities to determine who has knowledge and who needs it”. Participant D asserted that management-sponsored mechanisms should maintain a list of all relevant employees’ knowledge and experience; the personal e-Portfolio was sponsored by the CTO and everyone was required to maintain it (an “ought”). Conformance in his department is high because they see the value. Here he was again establishing his credentials as active and expert in knowledge exploitation, mandated by senior management. This was also apparent in his response to participant E’s suggestion for recognizing and rewarding knowledge sharing, to encourage participation on the (currently poorly used) Community of Practice sites. D said that tangible rewards could not be “mandated”, but rather a culture of knowledge sharing should be created, with sharing seen as good behaviour: encouraging intrinsic rather than extrinsic motivation. The reward would be seeing one’s interesting or difference-making work publicised. Participant C’s contribution to this was on an operational level: to set the expectation to share during the induction of new staff, and to involve team leaders in monitoring it. D further stated that he found networking by other means effective, and that it should be encouraged.
Root definition: Improve existing “mechanisms” to increase shared awareness within the organization of who has knowledge which can be applied on specific “projects” as a means of improving delivered outcomes.

The participants discussed raising the profile of the initiatives and the Information Systems tools to promote knowledge sharing. Their short-comings were seen as being a top-down requirement, imposed upon staff, and from being relatively unengaging. For participant E, staff needed a more emotional engagement with the tools, perhaps by providing interesting, relevant and important material. All participants felt that making the organization’s blogging facility (currently used only by senior management) available to all would be useful, although participant B thought that some would be reticent to post, for fear of being challenged.
Following the examination of the activity models, the participants reflected on the overall process. Participants D and E agreed that the diagrams were somewhat naive, reflecting the researcher’s unfamiliarity with the organization’s systems. However, all participants indicated that the exercise was useful, to see what it made them talk about, and that the diagrams could prompt further conversations. Participants A and B speculated about the method’s use with their customers, although this may reflect A’s previous experience with the method, as a way of increasing the efficiency of his department.
Chapter 7: Reflections on the field study

7.1 Introduction

One of the responsibilities of the researcher using an action research methodology is to reflect on the study as part of the cycle of enquiry. In Figure 5.3 (p.92) concurrent cycles of enquiry were proposed for the situation of interest and the method itself. This chapter contains the researcher’s reflections on how AIM was used in the study, both in the enquiry process and about the method itself, and how this was used reflexively to inform the later stages of the study. The PEArL framework (p.65) was used to structure the reflection. Bearing in mind the lessons taken from the pilot studies, this chapter contains further reflections on the experience of using AIM, and the usefulness of PEArL both to structure the study and to authenticate it afterwards. The premise of recoverability (Checkland & Holwell, 1998) is also examined.

Some methodological considerations about the use of AIM are considered. The specific AIM practice for this study prompted some suggestions about how it could be adjusted to accommodate different settings. In particular, the study made it possible to assess the usefulness of AIM for in-depth investigation of a subject that did not directly stem from practitioners’ concerns, but which was core to their practice. The multiple motivations of the researcher and the practitioner representatives are explored, with the aid of ideas about boundary and shared understanding, showing that a participant-led systemic enquiry can be of benefit to practitioners.

The conduct of the study was a new departure for AIM. The number of practitioners reflected the workshop practice, but the use of AIM for studies in organizations has hitherto been limited to smaller numbers. This study was an additional opportunity to test the idea that participants could come to a shared understanding of the issue. The use of a single cycle of enquiry recognises difficulties of access to the practitioners, and the results demonstrate that useful outcomes are possible in spite of this – returning to one of the original claims made for AIM: that it is a light touch method for helping busy managers appreciate their situations (West et al., 1995).

It is not possible for the researcher to know that participants have reached an Appreciation of the situation of interest in the full Vickers (1965) sense; any understanding by the researcher is influenced by her perception of what the participants say and the way they interact, which is why an initial statement of the researcher’s position was made. Taking this into account, comments on the participants’ apparent shared understanding can be made. The reflections in this chapter are made on this basis.
Reflection as part of the cycle of enquiry

Reflection aids the researcher’s learning process, as part of the cycles of enquiry. This is put at the service of the participants in the study, reflecting their ideas back to them in the models. It helps the researcher both understand the participants’ perspectives on the topic, and furthers her knowledge of the method. As the study progressed, the researcher’s reflections became better informed, through her interactions with the participants. This section shows how participant and researcher understanding developed.

Champion and Stowell (2001) proposed the use of the PEArL framework when conducting an AIM study, to provide the rigour needed for it to be considered “authentic”. This has been discussed in Chapter Four. PEArL was used when initiating the study, to ensure that important aspects were not neglected and to encourage the researcher to be mindful of influences on the study from the start. Cooray (2010) used PEArL to reflect on the boundary of her study and on the inter-relationships between the participants when they met (the “r” in PEArL). The researcher reflected on the study boundary, and as much of the participants’ characteristics and inter-relationships as were apparent at the start of this cycle of enquiry.

The boundary of the enquiry

Following Checkland (1981 et foll.), thinking about a situation systemically brings more insight into perceived human activity in an organization than treating it as a set of pre-determined systems. This is the case regardless of whether the managers in the organization or the participants in a study of the organization might think of their practice in terms of systems. It is part of the method’s aim to help participants realise this. To think systemically about a situation of interest in an organization, a boundary to the enquiry should be set. To do this requires an appreciation of the context and environment of the situation and the unit of analysis; in organizational learning, appreciations differ for an individual, a group or the organization itself. Realizations emerging at one level of analysis may have an effect at other levels.

In Churchman’s terms, defining the boundary of a system is contingent on “individual or social constructs of ...realities” (Stowell & Welch, 2012, p.110). The individuals and the social constructs in this situation were the participants and their working relationships, but although the question was mutually agreed between the researcher the researcher and the participants, the boundary of the study was not explicitly discussed, although it was implied. Initially, the study boundary was determined by: the researcher’s interest in knowledge sharing, which determined the initial question; the gatekeeper and his interest in the issue and the method; the access permitted to the organization; the choice of participants; and the perspective of the participants deduced by the researcher from the initial discussions. Within the scope of the “system to investigate
“knowledge sharing” were participants nominated by the manager, from operating departments and the Knowledge Services department, who were prepared to discuss knowledge sharing issues. It became apparent in the course of the study that the scope excluded the organization’s executive board, although two of the participants had direct reports to it. The scope also excluded the organization’s clients, although again, the operating departments had direct interactions with them.

It is certain that initially the researcher had an incomplete understanding of the environment and context for the study. What could be considered as the participants’ Appreciative settings (Vickers, 1968) or Weltanschauungen (Churchman, 1971; Checkland, 1981) were not fully known at the start of the study, perhaps even to themselves; both participants and researcher engaged in an Appreciative cycle from which realizations about the study boundary emerged. The participants’ developing appreciation of issues of knowledge sharing in their organization delimited a “boundary of understanding”. Once the enquiry was under way, it grew from the central concerns of the participants and provided them with a new way of thinking about their environment, for example in the realisation that their clients and fund-holders did not recognise the importance of knowledge-as-practice.

7.2.2 Authority at the start of the field study

Authority for the study was provided by the operating department senior manager, who, it was discovered later, had discussed it and possibly received permission, from his director. The manager was involved at the same time in commissioning AIM workshops, to learn and to assess the usefulness of the method for his department’s work, so it could be deduced that he had a particular interest in this research. The choice of participants in the study was his suggestion, which could have introduced some manager bias. In fact, this selection appeared to the researcher to achieve a balance between the departments and at different levels of seniority.

There was no opportunity to include transitory participants, partly because the security arrangements in the organization did not allow talking to people other than those being visited, and partly because permission to carry out the study was granted on the basis of short times needed for the engagement.

The researcher had met this manager (participant A in the study), together with participants B and C in two pre-study meetings, to talk about the question and the proposed method. The relations between these three participants appeared relaxed, with no obvious exercising of informal power on the part of A. Two of the participants were based remotely, making regular visits to the site. This caused some logistical difficulties when arranging meetings, particularly for the plenary sessions. For the most part, sessions were conducted in meeting rooms at the organization’s offices; room booking constraints included limits to time and most meetings being
held in very small spaces. The participants were willing to go further with extending their engagement than expected – in one meeting they re-arranged subsequent engagements in order to carry on. One senior participant met off-site to discuss the composite system map and the root definitions.

7.3 Reflection on Stage One of the field study

Reflecting on this stage, where the participants drew their individual system maps in a set of short individual meetings, the researcher considered engagement and authority (the EA of PEArL). The meetings were held in a small room at the organization’s office; room booking constraints included limits to time. The researcher was constrained by the availability of the participants; two were based remotely, although they made regular visits to the site. The simplicity of the system map notation allowed the participants to engage directly with the question.

The characteristics of the participants are discussed in the reflection on Stage Two (composite map), where the researcher’s perception of them, judged by what they said and how they said it, was becoming clearer. It was striking however that from the first, participant D was at pains to establish his credentials and his knowledgeability about the issue. He talked about his role as the head of Knowledge Services and in the successful changes made to the structure of that department to integrate it better with the operating departments. He was interested in the position the researcher had in her department. The impression given was that he wanted to remain in control and to manage this potential challenge to his position by asserting informal authority, exercising this as a commodity of power in his relationship with the researcher. Noticing this propensity at an early stage was useful in that the researcher was then more alert to the potential relationship and authority issues in the group of participants.

7.4 Reflection on Stage Two of the field study

In this stage, the focus was on getting the participants to consider the map elements as purposeful activity, and to encourage them to develop definitions of the elements to show what “ought” to be the case, to help clarify their understanding of the issue for their organization. Some participants grouped had subsystems together thematically in Stage One, showing the potentially complex and interlinked nature of the issue. The individual maps were already showing a combination of “is” and “ought”.

Once agreement had been reached on the composite system map, root definitions were developed for each subsystem and were used as an agenda for further discussion with the participants. This stage was crucial in initiating and then developing the participant’s awareness of
each other’s perspectives, and prepared the way for the shared Appreciation developed at Stage Three.

7.4.1 The composite map

When assembling the composite map, the researcher was aware of the possibility of introducing bias from her own point of view or imperfect understanding at this point. The number of subsystems suggested by the participants was too great to incorporate in the map, and the researcher had to make decisions about combining or excluding subsystems, while still retaining a faithful representation of each participant’s contribution. This interposing of the researcher’s sense-making could lay the method open to the criticisms made about other qualitative methods. The problem was averted by returning to the participants for authentication of the composite map, as in the pilot studies (p.81). There were difficulties to resolve though. Some of the composite subsystems were flagged as important by the participants in their individual maps, but did not have many contributing subsystems from the other participants. For example, as participant C played an ancillary role in participant A’s operating department, but identified so clearly the issue of most concern to her (the importance of tacit knowledge), the researcher wondered how to manage subsystems that are only identified as important by one participant. It is possible that the power of the other participants is exercised if this subsystem is removed after discussion in the composite map. While this question remained unresolved, a possible answer suggested itself. The map had twelve relevant subsystems at this stage; too many to develop further, but acting as a discussion point as participants decided which should be amalgamated and which discarded for this cycle of enquiry. A subsystem important to one participant could be examined in a further cycle of enquiry.

It also appeared to the researcher that the participants had a tacit understanding of what they meant by knowledge in their maps, through highlighting the different aspects of knowledge sharing. One of the main objectives of the further stages of the study was to develop an emergent view of what knowledge meant to the participants in the context of this study, and in the context of knowledge sharing in their organization. Rather than asking the participants explicitly to define knowledge at this point, the researcher took the decision to see what shared appreciation of knowledge emerged in later meetings.

7.4.2 Reviewing the composite map

In the review of the composite map, Stowell (2013) argues that the participants are doing two things. First, they are authenticating the map; in light of the comments made in para. 7.4.1 the researcher believes this is an important step, which is required by the method. Secondly, they are giving up their reasoning behind the subsystems, thinking about them as purposeful activities.
in preparation for creating root definitions.

The review activity was carried out mainly as a series of individual meetings (although participants B and C were in the same meeting); although these meetings were time-consuming, they allowed for participants to start to articulate their “hidden” views, which may be based on their tacit norms and values, and are move to an understanding of their own positions. The value of this for contributing to richness of the discussion later was established during the pilot studies (p.82). The researcher decided to e-mail the composite map to the participants before the meetings. Allowing them to view and possibly think about the material beforehand was an attempt to balance the study time frame with the value of the discussion. On the one hand, give participants time for reflection could enable them to make more insightful contributions. On the other, any interaction and pre-discussion between them may allow exercises of power which would not be visible to the researcher. There was no way of knowing, however, whether these discussions were already being had. The value of electronic and asynchronous communication was noted as a further research topic, for a subsequent cycle of enquiry. In the later stages the sense-making that took place in the meetings was valuable for assessing the progress towards a perceived shared Appreciation.

Two approaches have been used in previous studies to help participants review the composite map. The CATWOE mnemonic, particularly the elements of Transformation and Weltanschauung, was usefully deployed in early AIM studies (West et al., 1995). As root definitions and activity models are used in AIM to prompt participants to share their appreciations of the situation, the use of CATWOE in meetings with the participants would be consistent, and helpful in development of the models. It was certainly possible to view the proceedings through the CATWOE lens. In later AIM studies, the PEArL framework was used as an aid to thinking about the wider perspective, enriching the participants’ explanations (Stowell, 2012, p.16). This allows the researcher to reach a more nuanced understanding of the situation, taking into account the intangible factors which influence the participants, which can be reflected back to them. Cooray (2010) used PEArL to help participants consider what the current situation is (“is”) and what it ought to be (“ought”), allowing meaningful action to be identified. This approach was adopted for the meetings in the study, everyday language being more useful than “transformation” and ”weltanschauung” in eliciting responses (Stowell, 2013). As the study progressed, the researcher perceived participants’ Weltanschauungen, which were noted for their contribution to the eventual shared appreciation of the issues.

Participants. The composite map review activity was again carried out mostly as individual meetings, and the discussion with the participants. Two of the participants were included in one meeting, experimenting with the “subgroup” approach from the workshop version of AIM. They
did not appear to be inhibited by one another’s presence, but possibly their opportunity to say all they had to say in the time available was reduced. Both participant A and participant E moved towards a definition of knowledge at this stage, which is discussed in a later section. Bednar (in Stowell, 2013, p.3) comments on the contribution of personality to interactions in the group work of AIM, and a brief discussion of the researcher’s impressions of the participants’ personalities may be appropriate, for the light it sheds on their relations and authority in the group, and their Weltanschauungen.

Participant A appeared to be a straightforward person with a strategic understanding of the issues. His demeanour was academic, scientific, looking at the question in hand. He gave the impression of not being overly political, although it was possible the one of his motivations in engaging in the study was to introduce an exploration into knowledge sharing as a way of influencing the organization and the Knowledge Sharing department.

Participant D appeared to be a more overtly political operator, at pains to establish his credentials and length of experience, and in the second session, to indicate that most of the issues raised had already been addressed, either by current working practices or his strategy document. The researcher received the strong impression that he exercised his power in the situation to curtail discussion of issues, possibly in reaction to a perceived threat to his position; as a manager continually having to make the case for his department’s key role in knowledge management. He also invited the researcher to: “Come and talk to me about knowledge sharing after the research”- wanting to “own” the debate. The researcher’s perception of his Weltanschauung was that his issue is the ability to influence events: “We have provided [a strategy for knowledge sharing]; people should know about it and use it, properly”.

Participant E gave the impression of being a confident personality, a clear thinker with a quick and flexible understanding. His contribution demonstrated his intelligence and a breadth of perspective based on experience. Nominated by participant A to take part in the study, he had had team leader responsibility in the past and spoke about team leader experience, assessing performance, budgets. His views were stimulating, sometimes orthogonal to the others’ views, and seemed deeply rooted in his experience in his role and in his observations of its context.

Participant B was a thoughtful person, but appeared to have less confidence than participant E. His understanding of the current situation outside operation needs appeared moderate and his ideas about what could be done seem a little naïve, for example, devolving responsibility for the knowledge sharing issues he identified to the organization’s Chief Technology Officer “to make things happen”. He was subordinate to participant D, with whom he appeared to have a good relationship, and he appeared to have internalised D’s point of view on several issues, perhaps
because he is in the position where it is his responsibility to execute them. He appeared to have a good working relationship with participant A and was another of A’s nominees for the study.

Participant C gave the impression of being a forceful individual, with potentially much informal power, although it is not clear how much she is able exercise it. She appeared to have a close working relationship with participant B; they share space in the Library office. Her contributions focused on the use of interpersonal skills to achieve knowledge sharing goals at an operational level. At the later meetings, she tended to be silent and had to be drawn in. Reasons for this could be: lack of understanding of the method, not being convinced of its value, not having an opinion, being silenced in some way. The researcher did not have the opportunity to discuss these possibilities with her.

**Engagement.** In the meetings to discuss the composite map, an attempt was made to elicit the “is” and “ought” of the chosen subsystems, together with the persons responsible. The researcher was aware that her reporting was a reconstruction of what was said, and had to consider any possible bias introduced by her interpretation. The input of the research supervisor, who was present at all meetings, was broadly in line with her understanding of the situation, and provided an example of how to interpret at an appropriate level of detail.

The participants appeared comfortable with the system map technique and were willing to discuss at length their thoughts on the subsystems. In all cases, the meetings lasted longer than the projected time; this was an issue for the working of the method and was possibly a reflection of the researcher’s relative lack of experience. The agenda laid out for the meetings was ambitious and not all points could be covered; discussions about “is”, “ought” and responsibilities were the only practicable points which could be covered. The discussions mixed the “is” and “ought”; in addressing ought, participants would revert either to saying what they already do about the issue, or explaining the barriers to it working. An alternative approach would have been to limit discussion to one subsystem only and consider it in more depth. The response to these critiques is that allowing the participants to discuss the subsystems in a relatively free way ensured that the process remained participant-led, provided richness and allowed the researcher to develop a greater understanding of their respective Weltanschauungen. The meeting held with participants B and C was intended to take twenty minutes, but in fact took twice that time, and could have lasted longer. This pattern was the same for the subsequent meetings, and a criticism of AIM is that the need to retain focus on the question often leads to the sacrifice of richness in the participant response. Again, as earlier in the study and in the pilot studies, there is a conflict between the short time specified by the method and the amount of time a participant-led meeting can take.
More focus might have been gained by allowing the participants to know more about the method. The research supervisor advised against this, on the basis that participants would try to second-guess the next stages, and tailor their responses accordingly. Two of the participants, however, had an active interest and some experience in the method, and seemed able to take part in the current stage without apparent problem. Furthermore, it is in the nature of action research approaches that participants gain experience with the method as they engage in further cycles of enquiry. What could be aimed for is an on-going series of conversations in a cycle of Appreciation, where the processes of the method become transparent to the participants. Close attention should be paid to the dynamics and power relationships amongst the participants, as with the first cycle.

**Authority**: Following the meetings at this stage, the authority in the situation became clearer. The basis on which the participants may have de-emphasised certain subsystems (as not important enough, too hard to do anything about, or lack of agreement on which are important) also have a power dimension. Participant A had formal power in the situation, being relatively secure in his position at the head of a core operating department. Participant D also had formal power; his report is directly to the executive board, for a department seen as core to the organization's strategic aims (p.84) and he had line management responsibilities for participants B and C.

Informal power was divided between participants A and D. A had an interest in AIM and worked with the supervisor to set up AIM workshops in the organization. He was been able to call on the other participants to get involved. He has also spoken to a senior member of staff, who possibly acted as a sponsor – could this explain participants’ willingness to engage. D, being leader of the Knowledge Services department, was a proactive operator of informal power. He had to rely on powers of persuasion (verbal, strategy reports) to promote his department. He set out his credentials early (ensuring we knew about his PhD and experience in the company – seeing the knowledge problem from bottom up to current position), establishing that as a senior manager with experience in knowledge sharing, his opinions were valuable.

Participants B and E are team leader level workers, with operational and some tactical/strategic understanding. Participant C has a pivotal role as librarian in the Knowledge Services department, and a clear sense of what she needs to be doing. She is also the Knowledge Services department’s point of contact for participant A’s department. Hence she wields or potentially wields considerable informal power, particularly as participant D intends this role to be ambassador and influencer with the operating departments.

**relationship**: As the meetings progressed, a better view of the participants’ characteristics, one influence on their relations, emerged. The power relationships between the participants became
clearer at later stages of the study, but they were already detectable during the one-to-one
meetings. Participant D exercised both formal and informal power – based on his formal
Authority, and in the lead he took in setting the agenda for his department and its interactions
with the operating departments. His overt positioning of himself vis-à-vis the researcher at the
first meeting was also an exercise of informal power, although it was not apparent at this stage
whether he was intending to influence the outcome. E’s informal power was expressed as his
decided opinions about the subsystems he had identified, and his positioning himself as a well-
informed and experienced operator.

7.4.3 Reflections on the meeting to discuss the root definitions
Root definitions for each subsystem on the composite system map were developed by the
researcher and the participants were asked to review them, identifying the Transformation to
what “ought” to be the case for each one, and the Weltanschauung by which it made sense. This
was done in a plenary meeting, which all attended except participant A, who gave his comments
at a later date. The PEArL framework was not explicitly used to structure the discussion, but was
used afterwards to reflect on how shared Appreciation was starting to develop among the
participants. From the point of view of the main research question, the subsystems: “Distinguish
between information and knowledge”, “Improve opportunities to determine who has knowledge
and who needs access to it”, “Provide succession planning” and “Improve the capture of tacit
knowledge” were important. In fact, in the meeting, the participants decided the primary focus
should be on “Make decision makers/funder holders aware of the value of knowledge…”. This
divergence between the researcher’s position and the participants’ discussion of aspects most
relevant to them raises some questions about how the initial question might be negotiated when
directions for research are more specific in a subsequent cycle of enquiry.

Participants and Engagement: This was the first time that the majority of the participants had
met for this field study. Participants B, C and D were known to each other. All the root definitions
were discussed, and the meeting overran considerably, with participants taking the trouble to
rearrange other meetings to make time to complete the discussions. The different perspectives of
the participants and the possibilities for shared Appreciation became clear as the meeting
progressed.

Authority and relationships: Participant D’s seniority and strong views about putting in place an
appropriate culture dominated this discussion, and was consistent with his contribution in the
individual meetings. Participants B and C, his subordinates, appeared to have accepted and
internalised his views, possibly due to Knowledge Services strategy. Participant E, as an
independent participant with specific views, was able to interject ideas which enlarged on, or
were orthogonal to those of the other three, for example about providing motivation. Much of
the dialogue was between D and E in this meeting. Participant A's view, at the subsequent meeting, was more nuanced: he felt it to be important to distinguish between understanding and appreciating, where to appreciate is to absorb, include in one's value system and internalise (the influence of the AIM workshops was apparent). He added context to participant D's views about culture: the internal college of senior fellows formed to conduct original research are available to help but complain that they are not being used. The knowledge sharing culture therefore needs not only to include awareness of resources, but to motivation and encouragement to use them.

Participant D’s statement that the budget holder subsystem is most important may have been influenced by his job role, directly reporting to the Executive Board, but also being in charge of a department whose existence needed to be justified (not being mirrored by an equivalent client department), and by the work he had done creating knowledge and information strategies in the organization.

7.5 Reflection on Stage Three of the field study

7.5.1 Logistical considerations

The plenary meeting to review the activity models was attended by all the participants. Again the purpose of this was not to perfect the models, but to use them as aids to discussion, towards reaching the group’s shared Appreciation of knowledge sharing issues in the organization. The intention was to “generate radical thought by selecting some views of a … situation as possibly relevant to improving it, working out the implications of those views in conceptual models and comparing those models with what exists in the real-world situation” (Checkland, 1991). The participants were encouraged to think about “what” needed to happen, rather than “how”. The researcher encouraged the participants to explore the models as they wished. The participants did discuss the “how”, and more became apparent about their values and about what was culturally feasible in the organization.

Some remarks must be made about the logistics of this final meeting. The researcher considered whether to allow the participants to see the activity models before the meeting. The advantage of this might be more considered comments in the meeting, and the participants would have had the time to come to terms with the number and complexity of the models. On reflection, the researcher decided not to do this. The spontaneity of the participants discussing the models between themselves, jointly making sense of them and asking questions for clarification, would give the researcher insight into their thinking. The intention was that the participants would look at the activity models, discuss activities as given, make and defend minor changes. Then move on to seeing how all these could be put together in an overall activity model. However, the time allocated to the meeting was limited; Participants A and D had later commitments. This meant
that only a subset of the models could be discussed, but the senior managers’ commodities of power influenced which were chosen. A and D focused on “Make decision makers/funders award of the benefits of sharing knowledge effectively”, and then on “Improve opportunities to determine who has knowledge and who needs it”: as senior managers, these were the issues which concerned them most. The other participants followed their lead: E having incisive comments to make on the need for value to be demonstrated.

The task of facilitating them in appreciating their ideas about the question was not completed in the time allowed for the meeting, but the advantage of the method was that, even with this time-limitation, the participants were now enabled to continue discussing the issues after the study. Their shared view of the issue was made clear by their selection of subsystems to discuss in the available time. The participants did move away from the current situation to what ought to be the case, and were starting to clarify for themselves the issues around the question. Participant A (who had experience with the method) and participant D moved away from the detail of the models to the intention behind them, saying that they could see the value of the method in getting people to own their problems. They acknowledged that apparent naivety of the models stemmed from the lack of knowledge about the organization’s working practices, but that they were a useful “straw man” (D) to help them examine their thinking and practice. Participant A commented on the length of time taken for this exercise, compared with what had been specified at the start. In response, it was stated that as the situation was complex and rich, the participants themselves had given more time; in other less knowledge-oriented organisations (Champion, 2001; Cooray, 2010), the timings given at the start had been adhered to, and that the number of participants had also influenced time taken.

7.5.2 PEArL analysis

The researcher reflected on the plenary meeting and how it had affected her understanding of the previous phases in the study.

Participants: all were present for the first time in this meeting. Participants A and D had not met formally before although they had previously been in contact by e-mail and knew each other’s roles. Participant E arrived late; the researcher gained the impression that he is an outlier, being known previously only to participant A. Participants B, C and D all belong to the same department, and B and C mirrored D’s perspective. Participant A at one point appeared a little isolated in the face of this.

Engagement: Time pressure was more of a feature in this meeting; two participants had made a special trip to the meeting, but had to leave at the end of the allotted period. Viewing all the models took time. Some of participant A’s comments were about the method, and he made the
effort to conform to it; as well as having prior experience of AIM, he was sponsoring it in the organization, so may have been concerned about its being seen in a good light. Both participants A and D communicated well together. It was striking that despite the restrictive organizational culture, and the authority in the situation, the discussion in the meetings was open-minded, broad-ranging and detailed. This was perhaps partly attributable to the participants’ strong ethos, as providers of unique knowledge and honest brokers. The study boundary did not include the fund holders or external clients around whom much of the discussion centred, which would have changed the conduct of the meetings and the Appreciation gained.

**Authority:** The formal authority may lie outside the study, with participant A’s superior. A’s authority was informal, but as the instigator and advocate of the method in this study. Participant D again reminded the meeting about his credentials, commenting on initiatives in which he was involved, exercising informal authority on the topic of knowledge sharing. Although formal authority in the context of the study rested with the operating department senior manager, informal authority was a characteristic of the Knowledge Services senior manager. Two of the other participants reported directly to him in the organizational structure, and the direction he gave his department was evident in their contributions. In terms of relationships in the group, evidenced by the participants’ reactions to him, this manager exercised a considerable commodity of power, in stating his position and his credentials. He had recently prepared and promulgated to the Executive Board strategy documents on the handling of Knowledge and Information in the organization.

**relationship:** The dominant personality in the room was participant D, who took charge at the start. Participant A contributed on an equal level and they entered a “collegiate” relationship, partly down perhaps to A’s stance being one of enquiry rather than dominance. Participant E contributed strongly to the debate and did not appear to be intimidated by the authority of the senior managers. The two junior participants were more silent, seeming to be mostly in agreement with their manager or not contributing if the topic under discussion was outside their immediate area of expertise. Participant B interjected ideas, based on experience, which gave more detail, asked “what if” questions, but supported participant D’s views. Participant C remained silent until the discussion moved to an area which she felt was within her area of interest, then she was definite about giving her opinion. In the researcher’s perception, the effect of D’s direction of the discussion was to silence participants B and C, for whom he had line management responsibility. The operating department participants were more independent, exercising more of a spirit of enquiry, and engaged with this manager in the plenary meetings.

**Learning:** The participants’ comments at the end indicate that they learned (or said they learned) the usefulness of this method, in that it pushes the discussion and requirements for action back
onto the participants. Participant A intended to use it with clients and wants his department to use it; participant D considered it for the Knowledge Services department, and participant B was about to be trained in the method. Examining the models led to some small changes; reflecting on what “ought” to be the case helped them to suggest these refinements.

7.6 Reflections on using the method

The use of AIM in the study was influenced by the lessons from the pilot studies, and as it progressed, the researcher’s reflections and realizations, as part of reflexive practice. Further reflections are given here.

7.6.1 Relationship between researcher and participant

The experience of the pilot studies showed that a relationship of trust between research and participants was important, and that the researcher needed well-developed facilitator skills, and the ability to stand, mindfully, apart from her acknowledged ideas on the situation of interest. One early question was whether to instruct the participants about the method or to disclose it as the study progressed. It could be argued that, as the method is an action research approach, participants should be given ownership of the process. This is a view possible in the workshop mode, where the process of sharing understandings is more immediate, and the diagrams are more obviously tools to facilitate discussion. Another view is that there may be a problem telling participants too much about the method because this will make them think they know what to do, leading to superficial discovery and second-guessing the progress of the study. Non-disclosure could contribute to authenticity in that participants give a more spontaneous response at each stage, which exposes more about their underlying values. The problem here is that those participants who can exercise commodities of power in the situation, or who are more articulate or “political”, will possibly take control if other participants cannot do this so readily. In the end, the requirement for authenticity outweighed the concerns about power, and any necessary guidance about the method was given in the meetings.

In practice, participant A (the gatekeeper) had had some experience of using AIM, having attended workshops at about the same time as the study. It was interesting that in his responses, his style was to be discursive, giving full explanations of his thinking. The other participants were not told about the method, and the root definitions and activity models were new to them. The consequence was that the format of individual meetings occasionally differed, with some participants moving naturally to a more “open-ended interview” format. In the discussions arising from the system maps, participants interpreted the requirements to talk about the diagrams as either clarifying what they had put or being asked to explain their subsystems.
In the plenary meetings, the participants discussed the issues freely but the power exercised by some individuals was evident. In discussions of the subsystems, there was a tendency for the discussion to range around the topic. On the one hand, this was valuable, because more could be deduced from the conversation. On the other hand, the researcher had relatively little experience in eliciting what was needed (for example, the transformation and the Weltanschauung for the subsystem), although asking about the current situation and what should be the case was more useful. The researcher found that remaining a “considerate stone” required a conscious effort, so as not to lead the process by asking questions based on participants volunteering information in the individual sessions, or from past experience. This again confirmed observations from the pilot studies (pp. 76, 77). At the same time, facilitation skills were needed to prevent the meetings from straying away from the topic. There was a constant tension between hearing what the participants said and observing in detail how their shared understanding developed through discussion. At later stages, for example in the root definition meeting, facilitation techniques were used such as polling the participants (to give all a voice, to promote discussion).

With a researcher-defined topic, there is the possibility of researcher bias in the lessons drawn from the participants’ contributions. This is mitigated in the method by the repeated return to the participants for authentication of the diagrams, and for observations of the discussions amongst them. The reflections helped the researcher guide the questions asked in the participant sessions. The skill is to develop neutral questions, to surmount the barrier of one’s own awareness of the situation, to be transparent to the participants’ ideas.

There was an ethical consideration arising from the different perspective of the researcher and the participants. The researcher was interested in gaining views about knowledge sharing in the organization. The participants found that engaging with the method caused many issues about working relationships to surface which needed further exploration. However, as the study encompassed only one cycle of learning (due to time-scale, access ability, what the participants were told about the time taken), many of these issues were left unresolved.

**7.6.2 Recording outcomes**

An early decision was needed about how to record participants’ contributions and Appreciation, and the richness of the learning cycle. Alternative methods include: rich pictures; written notes; the system maps, root definitions and activity models which are part of AIM. All three methods were used during different stages of the study. A rich picture was used to capture the organizational context and some of the issues at the start of the study (Figure 6.1). In initial discussions, this helped the researcher to reflect the participants’ situation back to them, giving them some assurance about her understanding. During the study, the researcher used the AIM tools to capture and express the ideas of the participants and to provide the participants with
starting points for further discussion. The researcher sought authentication from the participants in all sessions where these were used, as part of the method, to ensure that she was continuing to understand their developing Appreciation. There were two difficulties with this. The first was the limit to the time allowed for the study; often meetings overran the allotted time and the scope for checking all features was correspondingly limited. The second was that, as the maps and models were kept simple to aid participant understanding, the richness of the discussion could not be fully captured. The researcher took notes to capture this richness, attempting to record not only what was discussed, but her reflections on how Appreciation and power relations were developing in the meeting situation. Recording sessions was not permissible in the organization, so the quality of the researcher’s perceptions relied on her experience of interviewing and note taking, accepting the danger of missing some of the richness of the learning cycle while noting. Asking participants which subsystems they wanted to focus on first helped identify, and provide time for discussion of, the most relevant subsystems.

The researcher faced the dilemma of richness of detail in the meetings, against working at the right resolution. The brevity of the method militated against the first, but, in theory, helped focus on real issues. The concept of saturation of the data could be used to indicate that an issue was important, but in the short time available in the meetings, it was difficult to say whether this had been achieved. An expert practitioner might have an instinct for this, but new practitioners need help to become competent in the method. In the study, the importance of an issue was deduced by the number of practitioners who indicated it as the most relevant and by the time given to it in the meetings.

At certain points, the researcher recorded which of the participants contributed particular ideas. This was useful for considering where the ‘significant’ ideas came from and for further tracking of contributions, assessing commodities of power. In comparison, the supervisor’s notes were more of a sense-making digest, which allowed focus on the participants’ interactions and relationships, rather than the content of the discussion. The researcher needed both to develop a full understanding.

7.6.3 Use of PEArL to manage the study

The PEArL framework was developed by Champion and Stowell (2001) to assist reflection on the authenticity of an action research study once it has been concluded – the device is “agnostic”. The researcher recognised the value of having practised using it in the pilot studies. For this study, PEArL was used in three ways: to inform how the study was structured at the start; as a tool during the meetings and for reflection as the study progressed; and to authenticate the study on its conclusion. During initialization, the mnemonic was used as a “checklist” to ensure that aspects considered to be important from previous experience of AIM had been considered. The
researcher thought about the implications of how participants were selected, how they engaged with the study and the authority and relational aspects of the study and at each phase of enquiry, the researcher used PEARL to reflect on the relationships and learning (see sections above). Reflections on the methods by which the participants engaged gave insight into the environment in which the study was taking place. Reflections about authority at different phases of the enquiry allowed consideration not only of relationships but also participants’ autonomy. In plenary sessions, the relationship and authority aspects of PEARL provided a (non-psychological) framework to reflect on whether participants were “silenced” and why.

7.6.4 Alternative deployments of the method

Since it was formulated, AIM has evolved as a method through studies (West et al., 1995; Smith, 2001; Champion, 2001; Cooray, 2010) and workshops (SPMC, 2008 - 2012). Its purpose has also evolved from elicitation of knowledge (West et al., 1995) to helping practitioners to develop a shared Appreciation of their situation (Champion, 2001; Cooray, 2010). This has been discussed at greater length in para 4.6. In the field study attempts, were made to combine the two purposes. In the original version of AIM, the CATWOE mnemonic was used to encourage participants to think more deeply about the subsystems identified. In later versions, only the Transformation (T) and Weltanschauung (W) elements of CATWOE were used, with the focus moving to understanding what “is” the case (Vickers’s “reality judgement”) and what “ought” to be the case (the “value judgement”). This simplified the task for the participants.

In this study, the researcher undertook a “cycle of enquiry” in the method, concurrent with the cycle of enquiry into the research question. Testing the different versions of the method as understanding grew, the researcher experimented with the different ways of eliciting participant responses, in reflexive practice. There was a progressive discovery of the most appropriate way to proceed, based on the growing knowledge of the method and continuing refinement of its practice. The refinement was influenced by how the participants engaged with the method, their perspectives and the organizational context. This development, from the needs of the research and the characteristics of the situation, is a defining feature of action research.
As an overview, the study had the following phases (Table 7.1):

**Table 7.1: Field study phases**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Researcher</th>
<th>Participants (facilitated by researcher)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Produce individual system maps</td>
</tr>
<tr>
<td>2</td>
<td>Prepare composite map</td>
<td>Authenticate composite map, with some subsystems prioritised</td>
</tr>
<tr>
<td>3</td>
<td>Propose root definitions for prioritised subsystems</td>
<td>Authenticate the root definitions, discuss the prioritised subsystems, move towards a shared understanding of the situation</td>
</tr>
<tr>
<td>4</td>
<td>Propose activity models for the root definitions</td>
<td>Discuss the activity models – the “ought” leads to an agenda for feasible action</td>
</tr>
</tbody>
</table>

The sections below describe the method refinements and the participants’ perspectives.

**7.6.4.1 One-to-one sessions versus plenary sessions**

The workshop version of AIM (Stowell, 2013) brings all the participants together over a day. This allows for the formation of subgroups to discuss subsystems, then an immediate follow-through in plenary to formulate the composite system map, root definitions and activity models, where participants develop a shared Appreciation of how change can be accomplished. The advantages of “synchronous” discussion, immersion in the topic, and facilitators to read the tacit, are clear. There is however the possibility that control may be taken by a dominant personality or authority figure, which would be difficult to unpick in the time frame of the workshop.

In the current study, the workshop model could not be used and because of the limited availability of some of the participants, times between meetings could be lengthy. A way had to be found to achieve the benefits of using AIM for this situation. Adapting the method deployment to the circumstances, the researcher experimented with combining meetings and negotiated that the later phases (discussion of root definition and activity models) should be conducted in plenary. In the different meeting combinations, the researcher was aware of the possible issues:

All meetings to create the individual system maps were one-to-one meetings. These initial meetings allowed the researcher and the participants to become acquainted, and started the process of showing the participants that they were in charge of the process.

More questions occurred at the composite map phase. At this stage, there are three objectives. The first is to agree on the subsystems, the second to prioritise and discuss the most relevant subsystems and the third is for the researcher to start to observe interactions that may lead to a judgement that the participants are developing a shared Appreciation of the situation of interest. In a plenary session, or in the workshop version of AIM, these objectives can be achieved together. In this study, a plenary meeting at this stage was not possible and more individual
meetings were held, although two of the participants were interviewed together in an experiment with a sub-plenary, workshop-style session. (One of the motivations for doing this was the large number of subsystems identified. The researcher considered splitting the subsystems between the participants, but discarded the idea because of the possibility of introducing researcher bias and causing difficulties with authentication). The experience of interviewing these two participants together was not wholly satisfactory. As they work together in their job roles, at the operational level, their views were congruent, and differences of their Weltanschauungen too concealed to discover in the time allowed for the meeting. The sub-plenary sessions were not pursued further because of worries about lack of consistency in choice of important subsystems and the introduction of too many variables when comparing ways of holding meetings.

Although the information coming out of these one-to-one meetings was rich, a problem became apparent with the way the method was used. The participants were being asked at once to comment on and agree to the composite system map, and also to discuss each relevant subsystem (in terms of CATWOE or PEARL), without knowing what the other participants’ views were. It could be that different subsystems would be selected as important, and that the researcher would then have the problem of having to revisit this stage with each participant, attempting to get agreement, with all the issues around version control which this would entail. The time commitment would necessarily increase and the momentum of the study could be lost, again confirming on the findings from the pilot studies (p.76). Also, a sequence of one-to-one meetings gives no scope for observing the developing of shared understanding, or the tacit interactions between the participants, so necessary when deducing power and trust relationships (cf West & Thomas, 1995). On the other hand, one advantage of the one-to-one meetings though is that interviewing separately preserves anonymity, allows participants to be freer in their comments by reducing the power influences of the other participants, and allows the researcher more time to determine their different viewpoints, before reflecting on how these perspectives are merged in the plenary sessions. A practical solution to this dilemma could be to assess which method suited the participants best, individually and collectively, at the start of the study, as far as is possible from knowledge of the study environment and participant types.

Using plenary meetings for discussion of the root definitions and the activity models was a new departure for the method when used in a research setting. Difficulties of a different type were anticipated in these sessions; opposing views may surface about elements of the composite map. Resolution may be influenced by power relationships amongst the participants. The researcher would need to identify who wields the formal authority in the situation, which could be difficult in early stages – it is only in successive plenary meetings that formal and hidden authority becomes apparent through the participant interactions – a progressive disclosure of authority. In this case,
although the senior manager who helped set up the study had formal power, another participant had equal, if not more, formal authority in the organization, and was more overtly influential in the discussions, for example, where D steered the participants. Members of his department outnumbered the other participants in the study. The researcher’s opportunities to determine who had the power in the situation was limited to the meetings, and her perception of the commodities of power was similarly limited. Her perception of the nuances of how this power was expressed only started to be fully developed in the last session, when all participants were present for the first time. The researcher felt however that a degree of trust was shown between the participants, as shown by their free discussions.

7.6.4.2 Meetings over a period of time versus a workshop format.

A related aspect is the effect of time, when the method is conducted as a series of meetings, rather than a workshop. If there is a long time between meetings, as was occasionally the case with the study, how do we deal with the possibility of organizational change occurring during the study? In this case, no change to structures or procedures was apparent, although the two senior manager participants were actively looking for ways to improve their departments’ performance and standing, and the Knowledge Services manager had recently presented a Knowledge Management strategy document to the Board. If change had occurred, the researcher would need to be aware of cues in the meetings that this had happened, requiring a sensitive “listening ear”. The change, and the ways the participants thought about and discussed it would add richness to the appreciations of the “is and “ought”; the main issue would be the researcher’s in detecting change in the first place, or being in a position where the participants trusted her and the process enough to be able to refer to it.

Some of the participants in the study work together and it was possible that they could discuss their views between meetings, which militates against the researcher observing evidence of authority and commodities of power in the situation. There may have been advantages in this however. AIM, conducted as a series of meetings in the participants’ environment, is a time-limited method, and the current study was set up on the understanding that it did not demand large time commitments. Accepting that participants will talk outside the meetings, and even allowing them to view the diagrams before the meetings, may make for more effective and reflective discussion in the meeting. This approach requires that the researcher is sufficiently attuned to be able to intuit the relationships between the participants, by the way they interact during the face to face meetings. When using PEArL in initializing the study, this could be planned for, as part of reflections on engagement and relationship. For subsequent cycles of enquiry involving the same participants, discussion between meetings may be the norm.

Reflecting on this during the study, and to minimise the time commitments, one alternative
considered was to send the system maps by e-mail to the participants shortly before the meetings, which were then arranged based on the participants’ availability, making the best of what time slots could be offered. The researcher would have access to the participants’ reported views on the outcomes of the discussion, rather than being able to observe directly. Although this was done as an experiment, the root definitions and models were not emailed as the researcher wanted to gauge the authority and trust in the discussion. The response or non-response to the e-mail would not be known. Further work is proposed to explore this idea (p.180).

7.6.5 Use of CATWOE compared with use of PEArL during the study

In the original version of AIM, for eliciting knowledge, the CATWOE mnemonic was used to direct the participants’ discussion of the relevant subsystems. This helped the participants think about the Transformation performed by the subsystem (and hence activities which ought to happen to achieve it) and the Weltanschauungen through which the subsystem had meaning and by which the participants thought about it. In the later version of AIM, when the influence of power relationships had been acknowledged (Champion, 2001), the PEArL framework was developed to reflect on this aspect. Cooray (2010) used PEArL to help clarify the existing subsystems (helping participants distinguished between the “is” and “ought” in their situation) and to examine the formal and informal authority; the Transformation required and the Weltanschauung through which it was viewed could then be deduced from the discussion. Both methods were attempted in the pilot studies.

In this study, both approaches were considered, from the composite map phase forwards. The researcher considered whether the different emphases might steer the conversations in different directions. Focusing on the T and W from CATWOE could be used as an explicit way of structuring the participants’ discussions; the participant introduced these by way of the system maps and models she provided. CATWOE was used by the researcher when preparing the root definitions, but not directly explained to the participants. The researcher listened to discussions through the lens of PEArL, to focus on the unexpressed power relationships and also the learning experiences for the participants as they set out their positions on various aspects of the subsystem and moved towards agreement. This was difficult to do. Most of the discussions were free-ranging, without a particular agenda; the use of guiding questions had to be balanced with the role of the researcher as the “considerate stone”.

These thoughts influenced the number of meetings: for example, when discussing the composite system map, establishing Transformation and Weltanschauung, “is” and “ought” and, then working on root definitions, was too much to achieve in the one meeting. As the researcher also needed to observe participants’ interactions, the cognitive load on both the participants and the researcher was high. Further investigation of the AIM method to mitigate this load (p.180), or
further experience with the method is needed.

7.6.6 Researcher’s preparation of material

A consequence of the researcher’s recording technique was the quantity of notes of the participants’ thoughts, resulting from discussion of the diagrams. This made possible a textual analysis, which contributed to the development of the material for the next stages.

There were initial problems with the resolution of composite map, which according to the method, should represent what “ought” to be. One of the participants created many subsystems, and the researcher had to make decisions about the granularity of the map, the combining of subsystems while preserving nuance. Some subsystems were too broad, or outside the study boundary as perceived at the time, or overlapped with or influenced other subsystems, the only difference being shades of meaning (resolved eventually by further discussion). This was a difficult exercise at the start of the study, where the researcher’s Appreciation of the situation was necessarily small. One approach was to look ahead and to try and define root definitions for the subsystems. This showed that many of the subsystems were a combination of “is” and “ought”, which anticipated some of the discussion at later phases.

The primary focus of AIM in the study was to help participants to appreciate each others’ perspectives. The next phase of the study was to promote this by discussion of root definitions, prepared for each subsystem agreed to be relevant. The root definitions meeting was the first opportunity to reflect back to the participants their ideas about what “ought” to be (Cooray, 2010), in plenary, and so it was important to present carefully thought out material. When preparing the root definitions to act as a focus for discussion, the researcher was drawing on evidence of the participants’ Weltanschauungen from discussions about relevant subsystems in individual meetings, the literature on root definitions, and the feasibility of producing activity models from the root definitions for the next stage of the study.

The researcher’s work on the initial root definitions associated with the relevant subsystems was informed by the work of Checkland (1999) on Weltanschauung, and by the influences which the conceptual stages of Soft Systems Method have on AIM. Each root definition should be “a concise description of a human activity system which captures a particular view of it” (Checkland, 1999, p167). However this statement is unpicked further: there is no such thing as a human activity system, merely the perceptions of purposeful human activity, viewed systematically and associated with different Ws (Checkland, 1999, p. 219). This means that there is unlikely to be a single root definition, unless the participants in an action research study have had the opportunity to bring to the surface and discuss their current Weltanschauungen, as part of a learning cycle (Checkland, 1999, p. 220). The purpose is to agree on a root definition whose W best accords with
the participants’ shared W, arrived at by negotiation and discussion and, in AIM, to use this to uncover those factors to do with relationships and power which hinder the process. (A suggestion for this research is that we are also able to identify factors which help the process). In this phase of AIM, the method draws on the work of Vickers in bringing forward the role of norms and values in a participant’s Appreciation, which in turn informs his/her Weltanschauung.

When preparing the root definitions, the researcher used T and W from CATWOE. The use of PEARL at this stage was limited to determining the “ought”. She experimented with different phrasing to find the definition for each subsystem which best fitted the participants’ contributions in discussion and her perceptions of their Weltanschauungen. Asking the participants to view alternative root definitions was considered but discarded as a possibility; while this could reveal more about the different Weltanschauungen and the potential conflicts in the situation, the participants were not familiar with the concept, and the limited time for the meeting would be better used in allowing them to prioritise and discuss single root definitions, rather than explaining in detail the thinking behind the different definitions. In the event, the participants did discuss alternative wording which reflected their collective views, and extended the meeting to allow them time for this.

The choice of language for the root definitions, suggested by the researcher and refined by the participants in the plenary meeting, affected how the activity models were prepared for the final plenary meeting, and some effort had been made to be clear on the wording used. The activity models for each subsystem were intended to be “an account of the activities which the system must do in order to be the system named in the definition” (Checkland, 1991, p.170). Following Checkland, the approach is to “generate radical thought by selecting some views of a situation as possibly relevant to improving it, working out the implications of those views in conceptual models”. The difference between SSM and AIM is clear here: with SSM, the conceptual models are compared with the real world situation; with AIM, the models are used as the basis for further discussion. There were several iterations, to be sure of showing the information flows and consistency in the level of resolution. Checkland (1991, p.174) discussed checking the models using a Formal System Model, against criteria such as the existence of a boundary and environment, a purpose, a decision-taking process, with resources to support it, and a measure of performance. Smyth (in Checkland, 1991, p.174) recommended substituting CATWOE for these. The researcher found Transformation useful, but the Actors in the situation were left implicit. A measure of performance would be an interesting discussion point, and would have meaning in the participants’ organizational setting.

The researcher looked ahead to the meeting to discuss the activity models, where the participants would be discussing the feasibility of the activities suggested, and the actors needed
to carry them out. It was possible to join up the set of activity diagrams produced for the meeting, as a series of black boxes, to give an overview of the situation of interest. This overview was prepared, to see whether it would be useful to the participants.

For all phases of the method, the researcher devised meeting plans. These plans could be executed where meetings were individual. In the plenary sessions, the discussions by the participants took over, and there were aspects which were not covered, because of time constraints or the fear of being too directive. A “Mode 2” approach (analogous to Mode 2 in SSM) could be considered for further use of AIM; further work to assess the implications of this is discussed on page 180.

7.6.7 Participants’ Weltanschauungen

With regard to Vickers’s concept of the flux of ideas and events, and their effect on the Appreciation of individuals, Checkland (1999) comments that Weltanschauungen (of individuals and subsystems) are not fixed. They change depending on the individual’s experience, and the cultural setting and exercise of commodities of power can affect how this change is manifested. When considering the whether participants can be said to have reached a shared understanding of the situation of interest, it may be helpful to think about the participants’ Weltanschauungen, revealed during the cycle of enquiry, and whether they changed during the course of the study. An important caveat is that the researcher can only base this on her perception of what participants said and how they interacted. It is not possible to say for sure that Weltanschauungen changed because of the discussions which took place over the course of one study; the researcher’s perception of change could be more a result of her developing relationships with the participants.

Although participants were drawn from different levels of seniority and across departments, the discussions were task-focused and there appeared to be a degree of trust. This could be attributed to a shared sense of identity. During the study a number of overlapping Weltanschauungen became evident, relating to the participants’ positions and their views on the relevant subsystems. Throughout the study, the researcher developed increasing understanding of the participants’ Ws and how they related to each other, having “perturbed” the flux of events and ideas which influenced them by initiating the study and introducing the knowledge sharing question. No overt conflict in Ws was apparent, but differences appeared, related to experience in particular job roles and possibly protecting the status quo. Where similarities existed, this was not as straight-forward as would be expected; two of the participants were junior members of a department led by a third participant.

In the study, the participants appeared initially to be stating their positions without taking each
other’s into consideration. There was some apparent exercise of the commodity of power which influenced the discussion. The researcher started to perceive participant Weltanschauungen in Stage Two of the study, during the review of the composite map, held mostly as on-to-one meetings (with the exception of the sub-plenary involving participants B and C). As the plenary sessions progressed, examining the root definitions and the activity models in Stage three, it was possible how participants’ views developed, in agreements about the perceived value of knowledge-as-practice, and the need to improve knowledge sharing practice, for example. Participants sometimes made claims to know how others thought, for example when speculating about the reasons for not documenting failure.

The participants’ Weltanschauungen can be summarised as follows. At the composite map review stage, participants B and C’s W appeared to be that scientific knowledge is important. For B, definitions of knowledge commonly agreed in the Knowledge Services department needed to be more widely known, to reduce misunderstanding. For C in her DPOC role, her view was strongly that “we want to know everything”. Participants A and E were concerned with the effectiveness of knowledge sharing. E’s W was that of a practitioner with high self-efficacy, and an awareness of cultural and political aspects influencing knowledge sharing in the organization. A’s W was that effective knowledge sharing is essential to his department and organization, and he has authority to explore new ways of achieving it. Participant D’s understanding of the political aspects of the organization informed his W, revealed by his emphasis on his credentials and credibility at this stage. In the plenary meeting, these perceptions appeared to be confirmed, for example, in their different perspectives on the meaning of tacit knowledge (p.110). Participant D’s W was more clearly shown to be an awareness of the political and strategic importance of his role and his determination to be effective in it. While A was aware of the political aspects of the situation, his W was that organizational values of impartiality and expertise were most important: “guardians of scientific knowledge”. Participants B and C, whose W was based more on operational experience, appeared to be silenced in the political discussions. A more detailed account of the emergence of the participants’ Weltanschauungen is given below.

The individual meetings at the start of the study showed the differences between participants’ initial Ws, where their positions were brought to bear on the question. Three of the participants (the most senior) used the individual meetings as opportunities to discuss and explain their perspectives – the researcher had to balance adhering to the method – cutting them off – against her developing understanding of their views. This in itself was interesting, and could be attributed to the participants feeling able to free-associate about the topic, or to setting out a more formal position. The Ws of the senior managers were “outward facing”; their views related to the issue’s effect on their departments, their ability to exert personal influence in decisions and to influence
their staff. This was particularly clear in the case of participant D, who was at pains to establish his position from the first meeting. Amongst all the participants, he was most concerned with relationships with his managers. Participant E’s Weltanschauung was task-oriented, concerned with the implications of logistics, timeliness and accessibility of knowledge, with an interest in motivations to share and the organizational barriers to doing so. The Weltanschauung of Participant B, the Knowledge Services team leader, was accepting and uncritical of his role, but showing an ability to step back and view the question generally. In the case of Participant C, the Knowledge Services librarian embedded in the operational department, her Weltanschauung was much more focused on day-to-day practice. She showed a detailed awareness of the problems and ways of solving them, but had few general thoughts about wider issues which would impact on them. The Ws of B and C were influenced by being located in the Knowledge Services department, led by Participant D.

As the composite map discussions were mostly held as individual meetings, the opportunity for the participants to understand each others’ perspectives was limited. Participants’ choice of relevant subsystems, however, showed the potential for a shared understanding of the aspects of knowledge sharing which were most important to them. The Weltanschauungen of all participants became clearer in these discussions, which prepared the way for the plenary sessions.

In the meeting with Participants B and C, the researcher realised more about C’s Weltanschauung: “We want to know everything”. Through discussion of the subsystems’ “is” and “ought”, Participant C explained more clearly her role and the barriers to fulfilling it. Although she could see the value of knowledge sharing to the organization, and the costs of not doing it, her solutions were limited to the collection of science and technology knowledge, and she did not show awareness of the organizational power structures which would be needed to ensure that the knowledge sharing issues were addressed. It was left to Participant B to introduce the importance of Business Intelligence, and to initiate a discussion about tacit knowledge. His view was that there was confusion in the organization about the meanings of “information” and “knowledge”, that tacit knowledge was more intangible, and that budget and effort should be set aside to capture it. In the views of both B and C, it appeared that the capture of tacit knowledge would be possible as for information or explicit knowledge. The use of AIM was starting to expose their ideas as not fully formulated.

During Participant E’s discussion of the composite system map, his Weltanschauung came more into focus as that of a practitioner, whose views were informed by his experience. He was able to reflect on the cultural and motivational aspects of the problem, pointing out the influences on knowledge sharing of a risk-averse culture where customers were impatient of detail or error,
where there was a constant turn-over of staff, taking their knowledge with them, and where mechanisms to preserve knowledge did not take these factors into account. His view was that a change to the organizational culture was needed. The session with Participant E showed that his Weltanschauung was more consciously determined than those of Participants B and C, and promised interesting interactions in the plenary sessions.

Of all the participants, D expressed his position most clearly, establishing dominance by presenting his credentials and taking a defensive stand on the perception of barriers to knowledge sharing. His Weltanschauung was that he had already considered the issues around knowledge and information in the organization, had prepared strategy papers for the Board and was actively executing plans to promote effective use of Knowledge Services. It is possible that he found the current study to be a threat. His position was the most overtly political of the participants’; he mentioned the need to apply yearly for budget and the existence of his department appeared to rely on the continued existence of the current organizational structure. The influence of this W on his views of the knowledge sharing issues was clear: exploitation of information helped to move it into the knowledge layer; it was the responsibility of others in the organization to be motivated to share information; there were a number of mechanisms, suggested in his strategy documents, which would help achieve this.

Although Participant A had concerns about the perspective of clients, and the problems of maintaining a knowledge base, his Weltanschauung indicated a more secure position, and an open interest in trying new methods for encouraging the effectiveness of his department and closer relations with his clients. He spoke of the need to make an economic argument for the organization’s services, in a competitive environment, taking the same position as Participant D about the need to generate knowledge from information. His view of knowledge as something internalised, which emerged as practice. This was a different perspective from the Knowledge Services participants.

Points of similarity, then, between the participants’ Weltanschauungen included: the importance of motivation for sharing; concern about the clients’ perceptions of knowledge and the need to maintain it; logistical barriers preventing knowledge sharing and exploitation on a day-to-day level; a lack of succession planning; a cultural change in the organization. As stated in Chapter Seven (Account of field study), the participants’ views complemented each other, often arriving at the same point from different perspectives. The individual meetings allowed the researcher to develop a rich sense of the participants’ Ws, before power relations or authority acted in the plenary sessions.

The plenary session to discuss the root definitions was attended by all participants except A. This
was the first time these four participants had met in the context of the study, although Participants B and C worked together and both reported to Participant D. In this sense, he had the formal power in the meeting, and it was he who took the lead; the choice of the most important subsystem (“Make decision-makers / budget holders aware of the benefits of sharing knowledge effectively”) was made by Participant D and the other participants agreed with him. As the discussions began, Participant D and E’s comments on the subsystem’s root definition were a basic restatement of their positions from the composite map discussions. Participant D’s authority was shown to be informal as well as formal amongst his team; it was apparent that a combination of his strong personality and his setting of the department strategy and working practices operated on his juniors, who appeared to have accepted and internalised his views. Their contributions were mostly amplifications of his views, giving practical examples from their work, where they commented at all. Participant C, in particular, was mostly silent in this meeting, although it was not possible to tell whether she felt she had nothing to contribute, whether she was being silenced by the greater authority of Participant D or articulacy of Participant E. E, as an independent person, was able to interject ideas which enlarged on, or were orthogonal to those of the other three. Participant A’s views, following the meeting, were more nuanced and reflective, adding context to the dominant discourse of Participant D. He was in broad agreement with Participant D, adding that D’s department should be adopting best practice activities in the same way as the operating departments. Participants A’s and D’s views promised an interesting interaction at the activity model stage.

The meeting based on the activity models was the first time that all the participants, including participant A, managed to meet. For Participants A and D, this was their first face-to-face meeting, although they had had contact via mailing list prior to the study. Participant D was again at pains to remind the meeting of his experience in the knowledge exploitation field, making explicit his “commodity of power”. However, he and Participant A worked well together, possibly due to A’s enquiring personality not challenging D’s persuading/dominating personality. During this meeting, it was apparent that the senior managers, A and D, had a different Weltanschauung from the other participants. Their perspective was to do with preserving (scientific and technical) knowledge in the organization and demonstrating its usefulness to the budget holders. For example, it could be deduced that Participant D’s views about the importance of the budget holder subsystem were influenced by his job role, directly reporting to the Executive Board, but also being in charge of a department whose funding needed to be renegotiated yearly. Participants B and C did not contribute as frequently in this meeting; their views appeared to be formed by practice and by the direction of the department by Participant D. It was not clear whether this was due to a true “fusion of horizons”. Participant E’s worldview was that of a
practitioner, but it was evident that he was using his experience to take a strategic view of the subsystems, and some intense discussion took place between him and Participant D.

Although the initial question related to knowledge sharing, the discussions revealed underlying issues for the participants. As these issues continued to be relevant to the question, it was not re-framed, but the contributions to increased understanding were noted.

7.7 Authentication of the field study

The way in which the study’s conclusions were arrived at is recoverable (Checkland & Holwell, 1998); the system maps and models record the participants’ views and the discussion amongst them. The PEArL framework was used as a guide when setting up the study and as a guide to researcher reflection during the study, contributing to the authenticity of the study as discussed by Champion and Stowell (2003).

Authentication by participants is a key feature of AIM, to ensure that the researcher’s perceptions of the discussions and the situation of interest are well-founded. Participants were asked to review the maps and models developed by the researcher and to discuss them. The adjustments and discussions described in the account of the meetings (Chapter Six) show how this continual checking back contributed both to the participants’ and researcher’s learning and to the robustness of the process. Participants appeared understand the complexity of the topics they were dealing with, and the outcome was a shared understanding of the external influences on knowledge sharing in the organization, and the extent to which participants could take the ideas forward to planning action. In the reflections using PEArL, the researcher reflected on whether the exercise had given the participants new appreciations, or insight into how to use the appreciations they have. Participants agreed on the value of the method, and their feelings of owning the issues. The space made to discuss the issues was valued – in the meeting to discuss root definitions, diaries were rearranged to make more time. The researcher’s perception of the power exercised in the study was that it influenced what was discussed. Although two participants, the direct reports to the participant exercising the power, appeared to be subsumed into his contributions, the other participants also considered the subsystem being discussed to be most important.

7.8 Summary

The researcher’s reflections on the field study included a continual, contemporaneous reflection on authenticity, using the PEArL framework. PEArL was also used to help structure the study at the beginning and to reflect on the study at the conclusion of the learning cycle. PEArL was not
used to consider what the participants said about the topic. The field study differed from the pilot studies in having participants who stayed engaged throughout, who were tolerant of the time requirements and who were willing to share ideas about the issue of knowledge sharing freely. This at once demonstrated the value of a participant-led method, but also one of the difficulties of action research; if the researcher is interested in a particular line of enquiry, care must be taken in framing the issue before the start of the study.

The researcher also practiced methodological reflexivity, considering how different ideas arising as the study progressed could be put into use, and the possible effects this might have on the participants’ and researcher’s learning. In further cycles of enquiry, decisions about mode of interaction should take place before the start. The merits of allowing participants to view material before meetings and the possible effect of discussions between the participants outside the meeting studies were considered. These are aspects of the dilemma: how can the method’s claim of a low time commitment by participants be reconciled with the need to allow rich insights to develop from discussion. The high cognitive load imposed by the method led the researcher to consider ways of mitigating it. Whether it required more experience and internalisation of the method (a “Mode 2” approach) or whether there is genuinely a problem with the load for both researcher and participants will be the topic of further research into the method.
Chapter 8: Issues of knowledge sharing in the organization

8.1 Introduction

In this chapter an account is given of the participants’ views about knowledge sharing, as they became apparent to the researcher during the field study. The researcher’s initial interest was in the implications for knowledge sharing of defining knowledge-as-practice, and how tacit knowledge was shared in the organization. The intention also was to see whether it was possible to provide enrichment from an interpretivist perspective into the issues and linkages expressed in the unified model (Figure 2.4, p.22). To provide this perspective, a method was used that allowed for an open exploration of the participants’ own subjective experience and perceptions. It was anticipated that the concerns of the participants might not be the same as the interests of the researcher.

The interactions between the participants are summarised and are referred to in more detail where appropriate in the discussion of the findings. A full account of the field study is available in Chapter Six and in the study documentation in Appendices F, G and H. The phrasing used in this chapter should not be taken to mean that participants’ views and characteristics are being presented as objective “facts”, but as representations of how the researcher perceived them.

Developing system maps, the participants determined issues around knowledge sharing in their organization, identified solely by them, and decided which subsystems from the resulting system map were most relevant to take further. Their exploration of these subsystems, mediated by their maps and models, also provided a starting point for examination of the wider influencing factors. Where they appeared to come to a shared understanding of the issues, this made possible richer insight into how these factors were interlinked. Where they were not apparently achieving a shared view or an accommodation on an issue, their discussions revealed their different perspectives to each other. Reflecting on these discussions, the researcher was able to gain a greater understanding of the issues as a whole. The outcome, described in this chapter, is an account of the knowledge sharing issues and interactions for this organization. Where appropriate, comparison with findings from the interpretivist literature is included.

8.2 Field study outcomes

The participants had many thoughts and concerns about the issue framed at the start of the research. Using the method, the participants were encouraged to articulate some of their own assumptions, through repeated discussion. Throughout the study, the participants made casual use of language (e.g. knowledge, tacit knowledge, culture), taking their meanings as understood
by everyone. For other words (customer, client, value) it became apparent that these had particular connotations for the organization, so it was important to distinguish between these connotations and the commonage usage of the words. In most cases the meanings became clearer through the discussions.

8.2.1 Aspects of knowledge

The participants appeared to have a strong and communal sense of their mission, believing that, as an organization, they provide expertise and special knowledge, without bias or favour. They were convinced about the contribution their work could make to the organization and their clients. This marked sense of mission was not stated initially, but when articulated in the meeting to discuss the Activity Models (p.112), the demeanour of all the participants suggested that it was a view held by all of them, and that it was not questioned. One possibility is that this could reflect management success in promulgating a shared sense of mission in the organization.

The participants were dealing with several possible definitions of knowledge and information. The remit of the organization is to provide scientific and technical “knowledge” (either by developing it or by obtaining it from other sources) and to use it to solve clients’ problems. The “knowledge” constitutes the capability of the organization, and business knowledge (“business intelligence”) is needed to exploit it – this exploitation could be presented as the organization’s raison d’être. When talking about knowledge, the participants were familiar with it presented as explicit knowledge (cf Chapter One), recorded in many repositories (formal reports, collections of documents and databases), with transfer mechanisms in place to promote its use (para. 8.2.3). Much of this facility is provided by the Knowledge Services department, to which three of the participants belong. For some participants, including one in the Knowledge Services department, this explicit knowledge is actually information, and the structure and mechanisms provided to share it are aspects of information management. Over the course of the study a wider, more nuanced, definition was revealed, which accorded with authors who see knowledge as knowing, or practice (Tsoukas & Vladimirou, 2001; Orlikowski, 2002; Spender, 2009, p.164). Participants, separately and in plenary, further disclosed their views about knowledge and it was possible to see a shared (although not explicitly stated) understanding developing: knowledge was summarised as “in-head” knowing, having experience, and expertise in practice, but also being able generate published work, providing evidence of knowledge for external clients. The participants stated that knowledge-as-practice requires the internalization of information, and the development of a personal capability in a scientific and technical area. Being able to maintain capability by using what is known is a crucial activity in the organization. Sharing this capability, for example among the organization’s subject experts, can generate new knowledge (both explicit and “knowing”). In this, the participants’ views were congruent with those of Tsoukas (2011,
following Polanyi & Prosch (1975): and Spender (1996, p.64): objective, explicit knowledge can only be “known” by the knower appreciating it subjectively: “all knowledge is personal”. In arriving at a definition of knowledge which emphasised knowing, experience and expertise, the participants’ views also had similarities with Orlikowski’s (2002, p.251) definition of knowledge, as being at any given time, what practice has made it. Knowledge-as-practice, combined with judgement, provides the capability which is needed for the exploitation of the organization’s knowledge generally. Problems caused for maintenance of capability by not having time or resources to practice (cf p.108) lent weight to this view.

For the participants, practice includes expertise in the practical elements of the knowledge domains, knowing the undocumented “tricks of the trade”, which some participants called tacit knowledge. Participant D gave an example of this usage: knowing how to stir the contents of a beaker in a chemical experiment to speed the chemical reaction. Judgement is exercised when deciding how to apply what one knows, knowing what is relevant, and (for Participant E) when to break rules. The participants agreed about the importance of human contacts and communication skills as a component of knowledge-as-practice: to use social and professional networks (amongst experts, within the team, outside the organization), to know who to contact for specific problems. They did not discuss the characteristics of their social and professional networks in detail; although Cummings (2004) comments on the advantages to knowledge sharing practice if an individual’s network consists of people with diverse experience. Similarly, barriers to knowledge sharing arising from competition for resources between teams (Tsai, 2002) did not figure as an issue for them.

The participants felt that some staff in the organization did not see the need to distinguish between information and knowledge, assuming that information and explicit knowledge were the same. They commented on the difficulties of maintaining knowledge capability due to a culture that de-emphasized the importance of knowledge-as-practice (pp. 108, 114). The different aspects of knowledge used in the organization could be illustrated by considering what was needed in a client-funded project (the usual mode of working): explicit knowledge derived from published work in a literature review, knowing what is available from the Knowledge Services repositories and departmental resources, finding people with the requisite expertise (deploying social and professional networks) and the capability to make use of this knowledge and network (practice). Some aspects of knowledge-as-practice could be described as tacit knowledge. The participants emphasized the importance of knowledge-as-practice both to show value for their clients and to work most effectively.
8.2.2 Tacit knowledge

Although the participants did not define tacit knowledge at first when they included it on their system maps, they went on to describe it in a number of ways at later stages of the study (p.110). An initial view was that it was problematic for knowledge sharing: tacit knowledge is “that which is hard to communicate, which can’t be written down, causing practical difficulties”. Another view was that some knowledge was “deliberately tacit”, described as implicit in Simard & Jourdeuil (2012), and by Li and Gao (2003, p.8). According to participant E, the risk-averse and blaming culture in parts of the organization led to non-documentation of failure, the consequence being that valuable lessons were lost. The influence of the different knowledge sharing subcultures is discussed further in para. 8.2.5. The hoarding of knowledge is a further expression of implicit knowledge; a possibility that subject experts “guard” their knowledge, whether consciously or unconsciously (Connelly et al., 2011), could be seen as a commodity of power (Stowell, 1989). Another perspective was that of interpersonal skills: “how to handle personalities” in the words of participant C. This was an interesting contribution – how an individual’s self-efficacy, or belief in one’s own capabilities, in interpersonal and communication skills could help to remove or avoid personal barriers to knowledge sharing. The use of these skills to promote knowledge sharing is commented on by Cabrera and Cabrera (2005, p.726); self-efficacy is more often linked to cognitive tasks (Bandura, 1989). Deploying interpersonal skills are also required when developing one’s social and professional network, to be called upon when engaging on project work (participant A).

The importance of tacit knowledge was a theme expressed by the participants throughout the study. They discussed its value to them and what they thought its value ought to be for the organization. They commented, during the composite map meetings and in the root definition plenary, on its use in knowledge-as-practice: its role in “in-mindedness”, the ability to make judgements, to use experience, to deploy the “tricks of the trade”; its importance, and its difficult-to-grasp nature. There were difficulties in realizing what tacit knowledge the organization had, for example that possessed by subject experts, or embedded in accepted working practices. Its role in “knowing” explicit knowledge (in the Polanyi sense) was not mentioned. A final comment from a participant (E) was that “real” tacit knowledge could not be known, or individuals did not realise what they knew, and therefore it would be unable to be articulated. An example of the problem this causes was given in the context of succession planning. An allocator matches a departing member of staff with his replacement in a suitable project, but he cannot do this effectively if he is not aware of what needs to be transferred. This variety of “tacit knowledge” may explain why two participants assumed that tacit knowledge described above could be captured or transferred (p.98).
The participants’ varied views on “tacit knowledge” suggest that they are encompassing anything that is not identifiable as explicit scientific and technical knowledge but which plays a role in their knowledge-as-practice. Logistical difficulties stand in the way of capturing those categories of “tacit knowledge” that are amenable to capture. Time and resources needed to overcome these are not always forthcoming; a cost-benefit analysis is generally conducted when deciding whether difficult-to-capture knowledge is important enough to record. Knowledge sharing in the organization depends on whether an appropriate project is funded (p.114). Therefore there are problems maintaining knowledge-as-practice developed in the course of a project, in that once a project has been completed, maintaining capability cannot depend on there being further action (Kakabadse et al., 2002, p.84). Other factors militating against sharing are possible misconceptions about using sharing mechanisms, or a lack of motivation for doing so (see para. 8.2.5). The question of reward for sharing knowledge is also discussed on page 117. Kogut and Zander (1992) have commented that where tacit knowledge cannot be codified, sharing it between people is slow, costly and uncertain.

Use of AIM helped the participants to express their ideas on what knowledge meant for them: experiential definitions of knowledge (which diverged from that given in the literature, discussed in Chapter One). There is the officially sanctioned definition of explicit scientific/technical knowledge, together with a range of descriptions and behaviours under the label of “tacit knowledge” by which the participants can make use of the explicit knowledge. Although their views did not conform to the definitions in the literature, their identifying tacit knowledge as a knowledge sharing issue was the starting point for a wide-ranging discussion, enriching their understanding of its meanings in their situation. The researcher’s view is that much of the organization’s explicit scientific and technical knowledge can be viewed as information, but she follows Tsoukas (2011) and Spender (1996) in proposing that, by the exercise of tacit understanding and by practice, it becomes embedded as knowledge in the individual. From this, the constituent elements discussed by the participants could also be seen as tacit knowledge, as they are needed to provide this transformation.

8.2.3 Knowledge sharing infrastructure

Participant D commented that it was not enough to generate and share knowledge; exploitation and dissemination were also needed. As the exploitation of both explicit knowledge and knowledge-as-practice is key to the organization’s success, and possibly its continued existence, its knowledge resources must be deployed effectively. The participants’ views on the rationale and the mechanisms for knowledge sharing are outlined before the discussion about the way the client values the organization’s knowledge (p.158), to set the context for the later findings, but also to illustrate their different perspectives. D, as the senior manager in the Knowledge Services
department, took a lead in this discussion. The description of the many mechanisms used for knowledge sharing shows the requirement for staff to deploy another type of knowledge-as-practice: being aware of what mechanisms are available, and how best to use them.

8.2.3.1 Rationale for knowledge sharing

The importance to the organization of explicit scientific/technical knowledge is reflected in the organizational structure (Figure 5.1), where the Knowledge Services department occupies a position alongside the operating departments. In the view of participant D, the department’s senior manager, the effective sharing of knowledge has a strong mandate from the head of the organization, and D has proposed strategic plans, informed by external bodies and standards (NoCo, the Knowledge Management Maturity Model and the Knowledge Council (HM Government)). These have been used as the justification for collecting all available explicit knowledge resources (e.g. scientific papers, archives, libraries) from operating departments into central repositories, as the Knowledge Services department becomes aware of them. Although much of this material can be called information (participant B), D sees his role as being to encourage staff to create added value by “exploiting” it. From his perspective, aired in one of the activity model discussions (p.112), the operating departments’ main task could be seen to be providing his department with knowledge. The operating department manager had a different perspective; interested in the practice of knowledge, he had some concerns about the effectiveness of the Knowledge Services department, which was still developing its mandated role in operational terms, and needed to prove its value to the operating departments for them to engage fully with its agenda and break down silos. Examples given were the competing claims to knowledge and expertise when providing project literature reviews and the lack of clarity on responsibility for items of knowledge and their use.

8.2.3.2 Mechanisms for sharing

The knowledge sharing facilities provided by the organization, gathered from descriptions and explanations by the participants, can be thought of in terms of assets and practice. When discussing how these mechanisms are used to share the scientific and technical knowledge, distinctions are drawn between its day-to-day use and maintenance, its transfer as part of succession when staff leave a role, and how to re-establish capability if it has been lost.

Repositories of explicit scientific/technical knowledge exist (reports, databases, collections) and the remit of Knowledge Services department is to discover and incorporate further resources, from inside and outside the organization. A “Systems Nomenclature”, a controlled vocabulary for naming systems, is intended to help identify possibilities for synergy in knowledge activities between departments. In support of the organization’s strategy (p.83), the organization’s
management has a programme to train its staff as systems professionals (Swales et al., 2011); a “Systems Maturity Model” is used to categorise its staff, from “aware of knowledge” to “subject expert”, capable of giving credible answers in official Enquiries and being aware of the political issues relating to their practice. All staff are required to maintain an e-Portfolio detailing their knowledge and experience. According to D, this is not widely used in the operating departments, but at his insistence, all Knowledge Services staff have a profile. As part of their practice, staff maintain their own lists of contacts. Externally sourced explicit knowledge and consultation are obtained from professional and scientific bodies (which may be in competition with the organization), from contractors and by maintaining links with expert staff who have retired or changed their role. There are links also with project clients, where they are interested in being involved.

The intranet within the organization is intended to play a key part in the knowledge activities, as part of the Knowledge Management strategy (p.83). For example, it supports senior management blogs, wikis, funded forums, communities of specialist practice relating to particular scientific fields, that however are apparently poorly used. A weekly e-journal is published, requiring content to be provided, and permission can be granted to use the global e-mail to promulgate initiatives. Training opportunities are publicised, system resources and guest material are made available. Participant A stated that more community management of this resource was needed, to encourage staff engagement.

Activities to promulgate effective use of scientific and technical knowledge in the organization include formal opportunities for sharing: subject expert seminars, training and workshops, a mentoring system. These are facilitated by the register of staff knowledge, which records their capability in subject areas. The Knowledge Services department has a member of its staff in each operating department to provide services and to identify resources that can be added to the main repository. There is some experimentation with new ways of sharing knowledge: participant A mentioned social networking tools used to build lists of contacts, and virtual communities. Where knowledge sharing is intended to equip a member of staff when another is leaving (succession), transfer mechanisms include workshops and seminars, mentoring by the departing staff member, 360 degree review, and work shadowing by an “apprentice”. Funded projects are a major mechanism for effective knowledge sharing; the project outcomes can be shared in areas beyond its remit. According to participant E, to be used for this purpose the project must run at an appropriate time, when the knowledge exchange needs to take place. The client must be willing to budget for the “apprentice”. The expert must take responsibility for ensuring that the knowledge is shared. Further knowledge generated in the project should be followed up. Participant E comments on the short time in post amongst staff, and the lack of willingness or
ability to be responsible for knowledge maintenance or transfer. From this, it would seem that the mismatch between the timescales for successive project cycles (dictated by the client) and for staff deployment/career development can militate against maintaining a particular capability. Clients want to pay for the project, rather than the ongoing capability (Weiss, 1999).

Discussing project work at the operational level, the participants commented on what responsibility for knowledge-as-practice means in the organization. They suggested that it meant not only developing and maintaining this knowledge, but also exploiting it and sharing it (p.117). This was discussed in the context of succession planning, where it was felt that knowledge sharing should be expected of the departing expert. The difficulties were also discussed. Taking responsibility for knowledge sharing is adversely influenced by the mismatch between timescales for projects which would maintain knowledge capability and the requirements for staff rotation. Other factors include the dispersed responsibilities which are a consequence of matrix management for projects. Although collective responsibility for knowledge sharing is to be encouraged (Ellis, 2001 in Riege, 2005; Zack, 2002; Zhang et al., 2012) comments, strategies are needed to overcome the logistical difficulties.

Other factors can reduce the perceived need for succession planning: for example, a recently departed expert is still available because they have his contact details, and some return to work for the department as contractors. The participants looked ahead to the need for a technical consultancy with training and facilitation skills (A), and ability to discuss knowledge requirements issues with clients at start of projects. The client-funded project plays a large role in maintaining or regaining capability, but a concatenation of factors need to be in place for this to be possible.

It was a concern to the participants that engagement with the mechanisms described above was not optimal, and in the plenary discussions of the root definitions and activity models, time was given to speculating as to why this should be, and what could be done about it. Aside from increasing awareness of knowledge sharing mechanisms, their views relating to motivations to share are explored in para. 8.2.5. The discussion of knowledge sharing at an operational, intersubjective level resonated with Huysman and Wulf’s (2005) interest in the non-canonical nature of knowledge sharing and other authors’ work on the mechanisms and motivations for carrying it out. Work on how the meanings attributed to common language were affected by different roles (Becky, 2003; Whyte & Classen, 2012), and the effect this had on the communication of knowledge suggests that the practice of developing a shared understanding could help participants be clear about what knowledge is being shared, and how accommodation could be reached on meaning. A preference for “an oral tradition of storytelling” detected by White & Korrapati (2007) in a community of practice suggests this would be a fruitful way
forward. The need to assess the learning experience of those with whom knowledge is to be shared (Peet, 2012) also suggests directions for a further cycle of enquiry.

8.2.4 Value of knowledge to the organization and its clients

The most important issue for the participants was that contribution of knowledge-as-practice was undervalued by the clients and fund-holders in the organization who, in the view of participants A and E, were results driven and did not appreciate the need to maintain knowledge capability for future work. The rationale for maintaining knowledge is its value to the user (Kakabadese et al., 2003, p.84). Pressure from clients for quick, cheap, results-only reports, and their unwillingness to fund knowledge activities causes problems in maintaining capability and in making space for knowledge sharing initiatives. Matson et al. (2003) determined this as a demand-side knowledge barrier. This was felt, particularly by participants A and D, to lead to increased cost and inefficiencies where processes have to be repeated to recover lost expertise when it is needed, and to reduce the capability of the organization to compete for future work. The participants’ perception was that differing world views of the scientists and the clients have wider implications for the value of knowledge and of the knowledge providing services of the organization itself.

For the senior managers A and D, insecurity around perceptions of value appeared to be a major concern, expressed throughout their interactions in the field study. From their awareness of the political aspects of the organization (Swales et al., 2011), they also commented on the external influences on the fund holders. In the work of organization, staff must at the same time collaborate and compete with other organizations on a European scale, and the remit had been moved away from being a knowledge generator towards being a knowledge aggregator and exploiter. Therefore it is less easy to defend requests for budgets to maintain capability.

The need to make a case for the value of the organization’s knowledge-as-practice was a significant learning outcome for the study and an issue where the participants shared an understanding of what ought to be done (p.107). The participants stated that there is a need to demonstrate value (D and E take the political view that the position of the knowledge providers is precarious). Following from this, capability must be maintained, and ways of doing this are needed. They believe that they have little influence over the attitudes and decision-making of the clients and fund-holders. However, the participants determined that they should make the economic case for keeping capability (or assessing the cost of rebuilding it) to allow the clients to realise its value and to take it into account. Equally, within the organization, ensuring that the decision makers at all levels of the project process understood it would improve their attitudes to knowledge sharing, and increase the prospect of resource allocation. Factors which might prevent this are discussed in the next section.
From these reflections, it is suggested that the way those in positions of political and financial power perceive the value of knowledge influences attitudes and practice in the organization. This influence is expressed in the resources they made available and in their willingness to engage with capability maintenance. This is a negative example of “agency” discussed by von Krogh (in Easterby-Smith & Lyles, 2011, p.409) where external bodies can exert power on sharing communities (p.25. The value of knowledge to those in an organization is often seen in financial terms by the Executive (Nold, 2011, p.93). The strategies for recognizing, signalling and acting on value that have been developed (Ndofor & Levitas, 2004) focus on explicit knowledge, rather than how knowledge-as-practice is perceived amongst stakeholders.

8.2.5 Attitudes towards knowledge sharing in the organization

From the participants’ discussions, a number of factors appear to combine to influence attitudes to knowledge sharing in the organization itself. According to participant D, at the organizational level, a mandate is provided from the Executive Board for knowledge sharing, and for the Knowledge Services department to work towards effective sharing and use. Strategies, structures and initiatives (p.154) exist to encourage the development, exploitation and dissemination of knowledge. Staff in operating departments are expected to engage with these mechanisms, and a culture of sharing is to be inculcated, through incentive or coercion. To drive this sharing agenda, D is making use of the mandate to act, placing his staff in the operating departments and pulling knowledge in to the centre. He emphasised a number of times the importance of setting a culture of sharing, including incentives and sanctions, to achieve the organizational goals (pp.102, 117). His leading of the discussion in the field study and the contributions of the other participants exposed some of the power issues with the “operational working out” of the agenda. Other suggestions from the participants included: a greater use of reward or sanction, with reward for reuse of knowledge as well as originality; making employees aware of the cost of not sharing; exposing them to the business goals of the organization.

8.2.5.1 Knowledge sharing cultures in the organization

The term “culture” was used by participants in the discussions as a shorthand for describing how they saw groupings of knowledge sharing behaviour (pp.99-102,108-111). Organizational cultures are an important influence on knowledge sharing, consisting of values and “tacit preferences” which influence assumptions about what knowledge is important and sharing behaviour (De Long & Fahey, 2000, p.115). Huysman and Wulf (2005, p.5) talk about organizational knowledge sharing as being carried out in the workplace, which forms an idiosyncratic group with distinct practice. From the participants’ discussions, it was apparent that there were several “idiosyncratic groups” in the workplace, consisting of operating departments and the Knowledge Services department, each with their own practices. Participants A and D (representing these
departments) shared a belief, however, that knowledge should be effectively used. This could reflect the setting of organizational goals (being essential to its survival). Su et al. (2012) comment on how communities of practice are formalised into knowledge management structures; the knowledge sharing mechanisms in the organization include communities of specialist practice.

Although the organizational mission appears to be well-understood (p.151), there are several barriers to effective sharing. As an example of the promotion of the sharing, participants B and C commented that a “need to know” culture is still in place, influencing staff’s willingness to share knowledge. Participant D, their manager, stated that this was used an excuse for not doing so, although in the original engagement with him (creation of his individual system map) one of his subsystems was the “need to know” culture. In an example of the power issues involved, there was a discussion as to who was best placed to produce the literature reviews needed when commencing projects, the operating department that had the specific knowledge, or the Knowledge Services department that had access to resource and general expertise in producing literature reviews. The effect of the reductionist attitude of customers on resources for sharing is outlined in para. 8.2.4. Participant E believed that this attitude contributed to a risk-averse culture, where discussion of failure (a factor in scientific work, and useful to know) is not encouraged and blame is apportioned. In his view, reports written in this environment tended to be defensive rather than open. The combination of the risk-averse culture and the un-aligned project/staff deployment cycles prompted questions about how to assign responsibility for knowledge. Currently this responsibility is dispersed throughout a matrix of managers, through movement of staff into different roles and through the involvement of contractors. It is important to identify who has responsibility for knowledge sharing and to ensure that it can be exercised without the perception that blame will be attached for any failure. This led on to the question of what responsibility for knowledge meant; some participants strongly believed that it was to share knowledge, particularly in the context of succession planning, and to exploit it. A related concern was a “you should know” culture; staff are expected to have knowledge capability and self-efficacy. On occasions, this can hinder the sharing of knowledge as staff act to protect their reputations, by not asking for what they need, or not divulging what others may need.

From the participants’ discussions, it was possible to suggest the different subcultures existing together in the organization, which are driven by the different values placed on organizational knowledge. Each has a different influence on an individual’s perceptions about the possibility of knowledge sharing and motivation to do it, about how self-efficacy is developed and practiced, and a political perspective which governs what is possible. The different subcultures alluded to by the participants are summarised here:

Subcultures which are influenced by the organization’s professionalism agenda are:
The mandated culture of sharing, practised in the Knowledge Sharing department, and promulgated through the operating departments, supported by the knowledge sharing infrastructure. From participant D’s contributions, the belief is that scientific and technical knowledge, and the knowledge-as-practice and business intelligence needed to exploit it need to be shared, to maintain an effective knowledge capability.

The “you should know” culture, related to expectations about professionalism and self-efficacy promoted by the system professional agenda, but which participant E suggests can manifest itself either in risk avoidance activities, or in refusal to impart information.

Subcultures which are influenced by the value the client places on knowledge are:

- The “need to know” culture, relating to working practices still espoused by older staff in operating departments, and still in operation in parts of the organization. This suggests that certain scientific and technical knowledge should be restricted in distribution to those who need to know it to carry out their work. There are situations where this is the case, but “need to know” can be used as a “reason” for not sharing knowledge.
- The risk/averse culture, where staff perceive that there is a tendency to assign blame rather than to accept and learn from errors. This is a response to the client’s demand for quick answers and lack of tolerance for the nuanced knowledge-as-practice approach, and similarities can be seen with the “you should know” culture. It is associated with a reluctance to take responsibility for maintaining knowledge.
- The change of culture also being imposed by the external requirement to integrate existing knowledge from internal and external sources rather than to generate it. This emphasis on exploitation rather than exploration (Kakabadse et al., 2003) is driven by external cost considerations. Participant D’s view is that staff should be aware of these external influences.

From his contributions to the plenary discussions, Participant D is working to ensure that the mandated culture of sharing is adopted. The other informal subcultures persist in the organization. The adoption of the espoused culture of sharing is a work in progress. This is expressed by Participant A’s comments about Knowledge Services needing to adopt best practice as operating departments do, and D’s contention that if persuasion to adopt the sharing culture does not work, that coercion should be tried. His statements, such as “People should just use the mechanisms” and “people’s perceptions are their problem”, show that in imposing the sharing culture, he chooses not to acknowledge why staff believe as they do. It is possible, therefore, to see how individuals come to perceive a conflict between the official, mandated requirement to share knowledge and those internal subcultures which act to decrease willingness to share – to expose oneself to challenge. “You should know” and “need to know” may be used to conceal a
practitioner’s lack of knowledge or competence, enabling him/her to avoid taking responsibility for ensuring that knowledge is shared. The conflict for individuals between the mandated culture and the messages from clients has an effect on motivation, self-efficacy and willingness to take responsibility for outcomes. This supports De Long and Fahey's (2000, p.117) assertion that organizational cultures and subcultures shape assumptions about knowledge, set the context for social interaction to control its use, and help define who generates, shares and uses it: “Management’s attempts at generating more collaboration and knowledge sharing ... will fall short until they directly address how the culture reinforces and values knowledge use at the individual level.” (De Long & Fahey, 2000, p.118).

8.2.5.2 Motivation for knowledge sharing

When considering the structural and external influences upon knowledge sharing, the participants revealed ideas relating to motivation. Some of the factors discussed above could be used to contribute to extrinsic motivation of staff – making them aware of the business needs of the organization (and therefore the need to “innovate, disseminate and exploit” their knowledge to best effect). Reward for reuse of knowledge, as well as for innovating, was suggested. Participant E proposed that there should be sanctions for not preserving knowledge. As part of his agenda for sharing, participant D talked about creating a culture of motivation and incentive, in an exercise of soft power, which would seek to influence behaviour of the staff, persuading them to internalise sharing attitudes and instilling intrinsic motivation. Staff needed an emotional engagement with the sharing mechanisms (p.155) to use them, and this could only be achieved by fostering intrinsic motivation and trust.

The participants revealed their understanding of the role of intrinsic motivation as they considered tacit knowledge and succession planning, and speculated on reasons for not sharing. Aside from the use of the “need to know” culture, and logistical barriers (such as the restriction of release conditions on reports, or the mismatch between project and staff deployment cycles), fear of being challenged was an issue (p.162). Self-efficacy, the confidence in one’s abilities, and concern about reputation are intrinsic motivators that were alluded to and that could also act to prevent knowledge sharing. The example was cited of a subject expert, about to retire, who had been encouraged to transfer his knowledge using a number of means (e.g. holding seminars, work-shadowing by a colleague). The individual left, to be re-employed shortly afterwards as a consultant. Here, the possession of tacit knowledge was a commodity of power (Stowell, 2000), contributing to the individual’s reputation but also affecting his wider sharing behaviour.

Participants were agreed on the need for better ways of motivating staff to share knowledge, and to make more use of the existing mechanisms. Work done in this area (White & Korrapati, 2007;
Young & Tseng, 2008; Jennings, 2011) points to the importance of inter-personal trust and openness, and the importance of an individual sense of responsibility. There had been a lengthy discussion amongst the participants in this study about the structural problems militating against responsibility for knowledge sharing or maintaining, and how motivation to share could be fostered.

8.2.5.3 Self-efficacy and reputation

The concept of self-efficacy, the belief in oneself as being able to act in the situation, is defined on page 28. It is encouraged by the organization as part of the professionalism agenda (Swales et al., 2011) and as a factor in participant D’s culture of sharing. It could be suggested that for knowledge sharing to be done effectively it must be personalised and valued, as well as codified. An individual who has self-efficacy is in a position to generate and exploit knowledge for the benefit of project clients, colleagues and the organization. The concomitant concern with maintaining a good reputation links to intrinsic motivation. In the “you should know” subculture, it is assumed that employees possess self-efficacy. In participant E’s view, employees who have underdeveloped self-efficacy can deploy a range of avoiding strategies which affect knowledge sharing behaviour (for example, claims of difficulties with technology when the real problem is the employee’s lack of ability to communicate effectively) (p.163). This tendency was commented on by Ardachvili et al. (2003) in the context of virtual communities of practice, where high levels of self-efficacy would be expected. However, in a risk-averse subculture, the self-efficacious person concerned about his/her reputation may realise the issues with a situation, but remain silent about them or create defensive reports. Li and Gao (2003, p.8) comment on the unwillingness to disclose knowledge for “organizational reasons”. Participants E and A discussed a case of this. The knowledge involved becomes implicit and concealed rather than shared. If the mandated knowledge sharing culture develops as D intends, it may address the “you should know” and “need to know” subcultures, but may not be able to influence the risk-averse subculture because of external influence and attitude of clients, fund holders/decision makers at different levels of projects.

It is important to recognise the existence of subcultures that may subvert the main culture of sharing in an organization, and their effects on motivation and self-efficacy. A “need to know” subculture, a “you should know” subculture or a risk-averse/blame subculture can interact to create barriers to knowledge sharing. These findings are further examples of organizational factors motivating or militating against sharing in the literature (Riege, 2005; Connelly et al., 2012). Although Simard and Joudeuil (2012, p.7) propose a knowledge management framework to share without changing an organization’s culture, they do not take into account the subversive subcultures which may exist.
From the findings presented above, the researcher was able to model the interplay between organizational cultures and the behaviours of individuals who either possessed or did not possess self-efficacy (Figure 8.1). The expectation for the mandated culture of knowledge sharing is that processes are in place to develop an individual’s capability, as part of the professionalism agenda. The existence of subcultures (“you should know”, “need to know”, “risk-averse”) leads to behaviours which hinder knowledge sharing. A self-efficacious person may conceal knowledge which is politically inconvenient or which might result in a loss of individual or organizational reputation, as in project failure, despite the fact that reasons for failure are valuable knowledge in their own right. S/he may also hoard knowledge to maintain power or reputation, as when subject experts move into consultancy roles. A person who lacks self-efficacy may attempt to avoid challenge by invoking the “need to know”, or attributing problems to technology rather than lack of communication skills. The “you should know” culture may inhibit that person from seeking the knowledge s/he is supposed to have already (p.164).

### 8.2.6 Power to act in the situation

This learning outcome emerged as a corollary to the learning about value and about the importance of tacit knowledge, and also from the debates about ownership of knowledge between participants A and D. It illustrated the participants’ growing awareness of the political boundaries within which they operated. The discussions (p.108) revealed that participants would like to change the situation to encourage greater appreciation of the value of what they do, but recognised the limits imposed by the expectations of clients who do not privilege knowledge-as-practice. The participants believed themselves to be constrained by policies which set the
environment in which the organization exists and its budgets (i.e. as a trading fund (p.84)), they need to raise money to conduct the research). From their descriptions of working with clients, who were interested in explicit knowledge and in financial value, the participants’ relationship to power holders affected their ability to influence decisions. The participants acknowledged that they must demonstrate value of their knowledge-as-practice assets, to change their clients’ attitudes and expectations, and that this needed to be done at every stage of project decision-making that involved external clients and fund-holders. This issue was most important to the two senior manager participants, A and D. Actions which they felt were within their power included: promulgating a culture of sharing; helping budget holders with examples and data for decision making; point out consequences of not sharing and promoting the benefits of timely sharing. Participant D’s mandated role, and the freedom which A had to experiment with practice in his department, appeared to be the extent of the power available to the participants to act on the issues they had discovered.

Participant D, in his role as Knowledge Services manager, was dominant in discussions not only about these actions, but in his promulgation of organizational strategies to increase knowledge sharing, to persuade or coerce staff to engage with them, and in his attitudes towards the operating departments. He appeared to be exercising commodities of power (Stowell, 2000), both formally and informally in the situation, and this was expressed by his demeanour in the field study and the relative lack of challenge to his views. The experience of the field study revealed that although power relations between the participants could be used to control the debate, these could not be guaranteed to help the participants to effect change in situations outside the participants’ roles, for example in influencing fund holders and the different levels of control in approving and executing projects. This was an example of what Orlikowski (2002, p.255) categorises as a political boundary.

8.2.7 Summarising the realizations

Reflecting on the discussions in the field study, the researcher believed that the main learning outcomes for the participants were:

- The importance of demonstrating the value of what they call tacit knowledge, and the expertise held, to those who had power in the situation
- The need to motivate individuals to share their tacit knowledge and to develop their self-efficacy
- Influence of the underlying sub-cultures on self-efficacy and motivation
- Recognition of how far they had power to act to achieve these outcomes.
Accepting that these outcomes are specific to the context of the field study, they nevertheless have certain resonances with the existing literature on knowledge sharing. Much of the interpretivist knowledge sharing literature focuses on the subjective and intersubjective experiences of those engaged in it (e.g. Baird et al., 2000; Bechky, 2003; Whyte & Classen, 2001). There are some studies that suggest action at the organizational level, but generally they have nothing explicit to say about the need to demonstrate the value of tacit knowledge.

The participants intimated that in this organization, the lack of clarity between defining knowledge as a transferable object or as knowing and practising leads to ineffective use of structures to promulgate it. In the discussions, orthogonal views existed on what constitutes tacit knowledge and how it can be used or shared, and the success with which this can be done was felt to be influenced by factors that are not necessarily under the participants’ control. Despite a mandate for a culture of sharing and efforts to bring it about, they suggested that subcultures exist that adversely influence individuals’ motivation and self-efficacy for effective sharing of knowledge-as-practice. The expectations of its clients are also felt to be a limiting factor in that they prefer explicit knowledge at the expense of the knowledge-as-practice that supports it. The participants believed that their power to change the situation is constrained by policies that set the environment in which the organization exists and its budgets. Where power to change lies outside the participants’ domain, they feel that purposeful action is limited to how they can influence the power holders, and this depends also on their position in the hierarchy. This was the most important realization for the participants.

Some actions are possible, for the participants who were senior managers. Motivating and rewarding people for sharing information, setting examples and expectations about sharing, and increasing access to new sharing mechanisms were all discussed. In the final meeting to discuss the activity models, the participants acknowledged that the use of AIM had provided them with a tool to appreciate their knowledge sharing practice (p.119).

Knowledge sharing was introduced as the topic for the study, being of most interest to the researcher. It was only one concern of the participants, perhaps not the main concern, but it was used as the lens through which the participants were able to identify and examine issues that were important to them. In the field study, issues relating to trust and reciprocity were not directly discussed, as the researcher had hoped. A major realization for the researcher is the way in which the clients’ perceived value of knowledge influences the informal subcultures in the organization, and the effects this has on individual motivation and self-efficacy.
The main learning outcomes for the researcher are summarised as follows:

- As the participants agree that knowledge-as-practice is needed to exploit properly the scientific and technical knowledge assets of the organization; the researcher’s initial position on knowledge-as-practice was supported by their views on it.
- A mandated culture of sharing is developed to promote effective exploitation of the knowledge belonging to the organization.
- The low value placed on knowledge-as-practice by the organization’s clients influences existing knowledge sharing sub-cultures.
- These subcultures affect motivation to share knowledge, and influence how self-efficacy is developed and exercised.

Figure 8.2 shows the relationships between these aspects of the study. The clients’ perception of the value of knowledge-as-practice influences the availability of project funding, which affects whether staff can be allocated to a project (for knowledge sharing, training of new staff, transfer of knowledge as part of succession planning (succession transfer)), and hence the organization’s ability to create and exploit knowledge. The loop is closed when issues about capability affect how

Figure 8.2: Researcher’s learning about knowledge sharing issues in the organization
the client sees the continued competence of the organization, and their willingness to fund the maintenance of knowledge-as-practice. The clients’ view of knowledge in the organization also plays a role in shaping the organization’s subcultures. Clients’ requirements for “the answer” and their intolerance of failure contributes to “you should know”, “risk-averse” and “blame” subcultures. This leads to a reluctance on the part of individuals to take responsibility for the ownership or sharing of knowledge. The effect on intrinsic motivation, combined with individuals’ self-efficacy (belief in their abilities), influences knowledge sharing behaviour in ways which affect the organization’s knowledge capability. There is a difference between what certain participants believe should happen – the mandated culture of sharing provides for staff development, as part of the professionalism agenda – and what is actually the case. The informal subcultures act to subvert the sharing of knowledge, as self-efficacious individuals conceal politically inexpedient knowledge, or hoard it to maintain their reputation, and others engage in distracting or avoiding behaviours.

8.3 Discussion

Comparison of the findings of the research (Figure 8.2) with the model derived from the literature (Figure 2.4, p.22) shows aspects of knowledge sharing that were of interest to the participants that have also been discussed in this literature. Drawing from quantitative studies and hypotheses based on sociological theory (p.26), the derived model suggests that self-efficacy and concern for reputation are components of intrinsic motivation which are at work in the organization, that the way knowledge is valued is one factor in barriers to knowledge sharing, and that assessment of organizational influences has not included those arising from subcultures or from considerations outside the organization.

The participants’ realisations from the research have allowed for reflection on the causes for inter-linkages between these factors. The perceived value of knowledge acts as a crucial driver for maintaining knowledge capability and influencing knowledge sharing behaviours. Informal subcultures affect self-efficacy and motivation to share knowledge, and to take responsibility for it. External factors affect the power of those in the situation to effect change. Conducting the field study using an interpretivist approach has enriched the participants’ and the researcher’s understanding of the influences on knowledge sharing in this organization. A more detailed comparison of the findings of the study with those in the knowledge sharing literature is presented below.
8.3.1 Literature based upon ontological models

This outcome is compared with the unified model (Figure 2.4, p.22) prepared from the review of the literature on knowledge sharing in Chapter Two. The literature on aspects revealed by the field study was then examined in more detail, to determine the contribution made by this study, as proposed in the research plan (Figure 5.3, p.92).

Studies by Tsai (2002) and Dyer and Nobeoka (2002) considered mandates to act at an organizational level. Their recommendations for the management role (provision of time and resources for knowledge sharing, breaking down inter-departmental barriers and encouraging inter-team communication) had their counterparts in the organizational level strategy, explained by participants A and D. Judging by the participants’ discussions about the barriers to motivation, a suitable structure of reward mechanisms for sharing did not appear to be in place, a point particularly made by participant E. A perceived lack of procedural fairness (Chen et al., 2012), related to the risk-averse subculture, led to those being responsible for maintaining knowledge being unwilling to give up knowledge about reasons for failure, or to pass on tacit knowledge as part of the succession process (reported by participant E). In discussion about the influence of organizational culture, Riege (2005) does not identify subcultures which may exist.

On the personal and intersubjective level this became apparent when the participants discussed the difficulty of obtaining tacit knowledge from subject experts who were retiring or changing role. From the participants’ perspective, subject experts experienced the social dilemma of whether to share knowledge (Dyer and Nobeoka, 2002). This was described by Hsu et al (2007) as a balance between the positive effects of reputation maintenance, satisfaction and self-efficacy on the one hand, and the negative effects of loss of power, a particular point to note if the expert hoped to return as a contractor (as related by participant A). Motivations to share were examined using Social Capital Theory in studies by Huysman & Wulf (2006) and Cabrera & Cabrera (2005): acting as “rational beings”, the subject experts should be convinced by the argument that knowledge sharing was needed for the success and survival of the organization. The contingency of the subject experts' behaviour in this organization (Shoghi et al., 2013) suggested that social dilemma considerations were a better explanation of failure to share their knowledge.

The benefits of cross-team knowledge sharing had been pointed out by Cummings (2004) – where links across team boundaries gave access to different perspectives and a wider set of resources. In the discussions between the operating department participants (generating knowledge) and the Knowledge Services participants (curating and disseminating knowledge for exploitation), there was some reflection on the efficacy of this structure (pp.104,105). There was a policy to have departmental points of contact from Knowledge Services in each operating department; the intention was to achieve a synergy between the departments. It was interesting that the
perspective of each department was that the other existed for its benefit (participant D stated that the operating departments existed to provide knowledge to Knowledge Services, rather than the other way around). The findings of Tsai (2002) on competition in cross-team knowledge sharing when resources were scarce seemed to resonate with D having to justify the existence of his department on a yearly basis, his pro-active stance towards guiding the organization’s knowledge sharing strategy and this attitude towards the operating departments.

At the level of the organization, effective knowledge sharing requires management initiatives that will facilitate it, a shared vision and a breaking down of the silos between departments and teams (Dyer and Nobeoka, 2002). From D’s description of his strategy and the introduction of an infrastructure (p.117) and mandated culture, work is going forward to achieve this in the organization being studied. The model in Figure 2.6 (p.25) summarises barriers to knowledge sharing at an organizational level. Much of what the participants said related to the problem of identifying appropriate knowledge, in their discussion of their definitions of tacit knowledge and its lack of value for their clients. They did not discuss the infrastructure except in that it was not used to its full potential; poor social and professional network caused problems in determining who had appropriate knowledge, but the senior managers appeared to have contacts (participant A) and networking skills (participant D) (p.117). Regarding the individual aspects in the model, participants’ discussions illuminated their concern for reputation, and for self-efficacy, factors involved in intrinsic motivation. Mention was made of individual barriers to knowledge sharing: poor communication skills and knowledge hiding.

8.3.2 Value, culture and motivation

An emergent theme in much of the participants’ discussion was the role played by different subcultures in the organization: those subcultures that exist, and persist (“need to know”, “you should know”, risk-averse), and that which has been introduced as a solution to knowledge sharing problems (the mandated culture). Using search terms based on the topics of how knowledge-as-practice is valued, its effects on organizational subcultures and on individual motivation and self-efficacy, a further literature search was conducted. The results are used to inform some general remarks about the role of organizational culture in knowledge sharing. The study findings are then compared with Alavi et al.’s (2006) work on its influence on knowledge management practices, where parallels can be drawn.

As knowledge-as-practice happens in social settings, culture barriers are influential when implementing knowledge management systems (Sajeva & Juvenicius, 2011). Much has been written from an ontological perspective about definitions of organizational culture, the existence of subcultures, and the influences on them. Definitions of organizational culture (Alavi et al., 2006; De Long & Fahey, 2000; Sajeva & Juvenicius, 2011), follow Schein (1985), who proposed
that culture consists of: basic assumptions, which are interpretive schemes to perceive and make
sense of events, activities and relationships over time; values, espoused beliefs about what is
important, reflecting the underlying assumptions, and expressed in behaviour; and artefacts,
technologies and behaviour patterns. This view of organizational culture is similar to Vickers’s
(1968) flux of ideas and events, which influence participant norms and values, and are influenced
by choices and actions made by them. Organizing schemes such as Cameron and Quinn’s (2005)
Competing Values Framework suggest how members of different types of culture behave; those
with open and supportive value systems are more inclined to share knowledge.

Following the differential perspective on organizational culture of Meyerson & Martin (1987),
Alavi et al. (2006, p.208) propose that organizations are made up of a mix of local cultures, with
the potential to compete for influence in how knowledge sharing mechanisms are used. Their
work, using a case study method to examine the effect of organizational culture on the use of
knowledge management tools, has similarities to the field study. It was carried out in a
knowledge-intensive organization that contained several subcultures relating to separate
communities of practice, it possessed a mature suite of knowledge management tools, and there
was an interest in how effectively these were being used. Alavi et al. (2006) suggested that certain
organizational and localised values could be discerned, which again were congruent with those of
the field study organization. Organizational values included a hierarchy of expertise, a perception
that the organization values innovation, and a movement towards formalising locally-developed
knowledge management practices.

Localised values showed that perceptions of knowledge management technology were shaped by
the embedded values of the organization’s members, and this influenced how they used them.
The difference in these values and the presence of different community of practice-based
subcultures in the organization led to different tool usage and outcome. Therefore collaboration
building between knowledge leaders, to learn from the different perspectives, was a more
effective way of sharing than a uniform imposition of structure. These insights led them to
develop the model in Figure 8.3.

Comparing the findings of this field study with Alavi et al.’s (2006) model shows that they have
some similarities. Organizational values included the participants’ perception of mission, and
participant D’s advocacy of the mandated sharing culture. Their effects could be seen in the
knowledge sharing infrastructure provided to support knowledge capability and project work.
Local values, however, were influenced by the informal subcultures to which the participants
alluded; embedded values within the organization were thought to influence knowledge sharing
behaviour.
Although later work by Cameron and Quinn (2011) proposed that culture change is possible and necessary to improve knowledge management, Simard and Joudeuil (2012) suggested that changing an overall culture is not necessary if knowledge leaders are empowered to collaborate. This view is not borne out by the findings of the field study, where the existence of the subversive subcultures was felt to affect intention to share knowledge. Although Alavi et al. (2006, p.219) discuss the influence of organizational culture on knowledge management, and the influence of local values, they do not go as far as to consider the influence of subcultures which impede the sharing of knowledge. Nor do they take into account external factors, in this case the influence of the values of the client, which in the field study results in under-resourcing of activities for maintaining knowledge capability. If the lessons from their study were to be transferred to the organization in which this research was conducted, their model could be extended to show how these external values influence organizational values, and also the informal subcultures, which in turn influence local values, leading to unintended consequences for the development of the knowledge sharing community. Suggested changes are shown in Figure 8.4.
8.4 Summary

Reflecting on the outcomes of the field study, combined with the resonances with the literature explored, it is possible to see that use of the method has made possible a holistic account of knowledge sharing in this context, ranging across units of analysis from the organizational level to the personal. Comparing this with a synthesis of the findings of the other studies showed similarities, the value being that the findings in this study were explicitly founded in the experiences and perspectives of the participants. This is an example of the value of the action research approach, and more specifically, the specific contribution of using AIM, allowing enquiring and learning where the domain is already known, but because of its complex nature is difficult to describe (Stowell & Welch, 2012). Specific insights were gained into the importance of extra-boundary influences on an organization’s knowledge sharing practice. It is necessary to take into account how informal cultures are affected by these when carrying out knowledge sharing initiatives.
9.1 Research aim and findings

An argument has been made that the literature on knowledge sharing does not adequately take into account subjective human experience. Models developed to explain aspects of knowledge sharing in organizations lack the insights that would accrue from the active contribution of those participating in knowledge sharing. The aim of the research, set out in Chapter One, was to carry out an interpretivist enquiry to gain insight into the subjective experience of knowledge sharing and the influences on it. The researcher’s initial position arose from an interest in how knowledge is defined by people using it, how this affects knowledge sharing practice, and what other factors affect practice. To explore an area that provides the subjective input, a field study was carried out in a research organization using the Appreciative Inquiry Method. This method allowed the participants maximum freedom of expression, helping them to realise and explore their assumptions and values around the topic. In a series of encounters, they came to a shared understanding about the issues around knowledge sharing in their organization. The researcher observed the process by which the participants reached their shared understanding and reflected on aspects of the interactions that could hinder it. The researcher also reflected on new ways of using the method itself and its constituent components. The outcomes of the research were a better understanding, both for the participants and the researcher, of the organization’s knowledge sharing issues. The participants also learned about the method, equipping them to carry out a further cycle of enquiry (p.132). Overall, the outcomes demonstrated the need to access attitudes to the value of knowledge, and to realise the extent to which knowledge sharing can be accomplished, being aware of organizational structure, individual motivation, and the barriers imposed by hidden subcultural norms. Although the research was not commissioned by the organization, and therefore there is no official policy contribution, the participants who were senior managers came to an important realisations about the need to make their clients and fundholders aware of the value of knowledge-as-practice. They commented on the value of the method for achieving this realization and as a useful tool for discovery and sense-making around their issues.

Addressing the research aims listed on page 2, the researcher used the Appreciative Inquiry Method to understand what some members of the field study organization think about knowledge sharing, and also how the many factors that concern them are interconnected, and to compare this understanding with the knowledge sharing literature. Bringing out the participants’ assumptions and believes helped them to share their understanding of the issues of knowledge sharing in the organization. As a sense-making tool, AIM enabled the participants to work out
which of their knowledge sharing issues to attend to, showing its value is in clarifying aspects of a situation preparatory to thinking about future action. Further realizations about the method were made by the researcher and the participants, which have contributed to ideas about its future development.

The research has provided a synthesis of ideas about knowledge sharing in the context of this organization, from the shared perspectives of the participants. Knowledge-as-practice is important in maintaining capability to exploit scientific and technical knowledge (p.151). It encompasses what the participants labelled as tacit knowledge (p.153). A mandated culture of sharing is promoted but effective knowledge sharing is affected by the low value placed on knowledge-as-practice by the organization’s clients, expressed in project funding decisions and the influence on the organization’s informal subcultures (p.159). The existence of these subcultures has an impact on staff motivation and self-efficacy, which subverts the mandated sharing culture (pp.162,163). The power to address these issues is limited by factors external to the organization (p.164). These insights are summarised by the model in Figure 8.2.

Methodological insights include novel approaches to the process of enquiry, and endorsement of the “r” (relationship) component of the PEArL framework.

9.2 Knowledge sharing contributions

The participants’ exploration was not limited to knowledge sharing per se. Discussion of the issues was a catalyst for discovering wider concerns that had a bearing on the organization’s knowledge sharing, and a reconsideration of the political boundary of the study (Orlikowsky, 2002). This wider context is as important to success as the mechanisms provided and practice adopted. A main outcome of the study was that the perceived value of the organizational knowledge influences motivation to develop, disseminate and exploit it, and an integrated approach is needed to make knowledge sharing in the organization effective.

The research provided an original understanding of the interconnectedness of the knowledge sharing issues in the organization. This has been used as a source of insights into aspects of knowledge sharing identified by Wang and Noe (2010, p.116) as needing further investigation (Figure 2.1, p.18) which include the environmental factors of culture and climate and motivational factors relating to individual attitudes. The research also informs the existing literature on knowledge sharing intention, intention to encourage sharing, and sharing behaviour.

Findings on knowledge sharing were summarised in Figure 8.2 (Researcher’s learning about knowledge sharing in the organization, p.167), Figure 8.1 (Effects of organizational subculture on self-efficacy in knowledge sharing, p.164) and Figure 8.4 (Suggested changes to the model of
Organizational Values and KM, p.173), and the contributions below make reference to these.

9.2.1 Influence of perceived value of knowledge-as-practice

A first contribution of this research is that it explains how external views of the organization’s knowledge-as-practice have a direct impact on organizational subcultures, and hence on individuals’ motivations to share knowledge. The field study’s participants agreed on the importance of knowledge-as-practice for maintaining and exploiting the organization’s scientific and technical knowledge capability. One of the main issues for them was that their clients and fund-holders did not share this value. The clients’ demand for quick results, reluctance to fund knowledge-maintaining activities and dislike of failure contributed to the existence of risk-averse and blaming subcultures in the organization. Participants believed that the effect of this could be seen in staff reluctance to share their knowledge, despite considerable encouragement from the organization’s knowledge management strategy and sharing infrastructure. The significance of the contribution is that it makes the link between how knowledge is valued externally and organizational subcultures, and provides support for the explanation that the characteristics of these cultures affect knowledge sharing practice. Although Kakabadse et al. (2003) and Matson et al. (2003) have suggested, respectively, that value drives knowledge maintenance and that a low value for knowledge acts as a barrier to knowledge sharing, they do not specify the type of knowledge to which this applies nor the mechanisms by which it happens. The discovery of informal subcultures in the organization that subvert the mandated culture of knowledge sharing (para. 9.2.5) supports De Long and Fahey (2000, p.119) in their assertion that low trust cultures constrict the flow of knowledge. The existence of organizational subcultures means that staff are influenced by the cultural models (in the sense that “culturally derived ideas and practices that are ... enacted or instituted in everyday life” (Fryberg & Markus, 2007)) that have developed with them.

9.2.2 Subcultures and the exercise of self-efficacy

The characteristics of the organizational subcultures were found to affect intrinsic motivation to share knowledge in the organization being studied (p.162). Self-efficacy has been identified as a component of intrinsic motivation in the literature (Hsu et al., 2007; Chen et al., 2012), and Social Cognitive Theory (Bandura, 2001) has been used to explain it (p.28). A second contribution of this research is in identifying the impact of organizational subcultures on self-efficacy, or the lack of it, and the different sharing behaviours that result. Where intrinsic motivation to share is influenced by organizational subcultures, the effects on how self-efficacy is expressed are varied. Figure 8.1 (p.164) summarises the findings for the organization being studied. An individual possessing self-efficacy in the mandated culture of sharing is seen as “professional”; if s/he does not have this quality, the mandated culture can make provision for training or other activities to help the
individual achieve it. Where the organizational subcultures are subversive (risk-averse, blaming), an individual with self-efficacy may conceal knowledge-as-practice that is not politically convenient, or be reluctant to take responsibility for it. An individual who lacks self-efficacy may adopt strategies to avoid sharing or being challenged. This contribution is significant in that where organizational subcultures exist, a range of behaviours resulting from the interplay of motivation and self-efficacy become possible. It cannot be assumed that self-efficacy is always a good, or that achieving it is merely a matter of training or other mandated activities. The nature of the subculture is a factor (p.161). It is important to assess the unintended consequences for sharing arising from individuals’ self-efficacy or lack of it, in these situations. It is possible that barriers to knowledge sharing in the situation benefit some people, depending on the cultural model of the subculture, for example in the hoarding of knowledge. This is a knowledge sharing practice itself.

9.2.3 Extending model of organizational values

In this study, it was found that client and fund-holder views that are external to the research boundary and to the organization affect organizational subcultures and the consequent knowledge sharing behaviour. A third contribution is the extension of Alavi et al.’s (2006) model of organizational influences on knowledge management to take this into account (p.172). Working in the context of an IT company containing many communities of practice, Alavi et al. propose that organizations are composed of a mixture of local cultures and that effective sharing can be promoted by allowing community of practice (local culture) leaders to share their best practice rather than imposing a general sharing structure. They do not take into account barriers to sharing resulting from external perceptions of those with power in the situation, or the existence of subversive subcultures. Incorporating the participants’ learning from the organization being studied, these would include external influences (von Krogh, in Easterby-Smith & Lyles, 2011) and unintended effects of the organizational subcultures. Figure 8.4 (p.173) shows how the model could be extended to show this. Although it is not possible to generalize from an interpretivist study (p.51), the implications are that the impact of organizational subcultures on knowledge sharing and the external influences on them would be a fruitful area of study in other organizations. A full account of the subculture is needed, to allow an assessment of its beneficial or negative effects on sharing. Suggestions for further work are given in section 9.5.

9.3 Methodological contributions

A fourth contribution is AIM’s value in sense-making, combining simplicity of use and a reflexive and authentication-oriented approach, for both researcher and participants, when enquiring into subjective experiences of organizational knowledge sharing. The situation of interest was complex, with many contributing factors and unspoken assumptions. The method, with its ability
to bring to light difficult to articulate ideas, allowed the participants to articulate their understanding about what knowledge and tacit knowledge means for them. It also allowed them examine the factors involved in knowledge sharing, to realise what assumptions they were making and to identify aspects of their situation that were of real concern to them. The method was robust enough to accommodate different modes of engagement.

9.3.1 Modes of Engagement

Some aspects of engagement in the study had not been attempted before and may contribute to its further development. There was a tension between the limited time which the participants could spare and the time needed to develop a rich shared understanding (pp. 138,139). The cognitive load on both researcher and participants can be high. Different engagement strategies were attempted. One-to-one meetings (as in stage 1 of the method) enabled participants to give up their thoughts freely, without power being exercised over them in the meeting, but the differences in ideas expressed in the separate meetings (for example, which subsystems were most important to develop further) meant that further cycles might be necessary to obtain agreement. In the composite map review stage, where participants were required to achieve a great deal in the meeting, an attempt was made to reduce the cognitive load by e-mailing the maps to the participants, giving them the opportunity to review and possibly discuss the material before the meeting. It must be acknowledged that discussion between the participants outside meetings may be happening anyway. If this approach is adopted, although the participants’ learning may be enhanced, immediate reactions and accommodations are concealed from the researcher. Using the workshop model (Stowell, 2013), where most of the stages are conducted in sub-groups or in plenary, had the advantage of minimising the time required from the participants and ensuring that all discussion is carried out in the presence of the researcher. This was difficult to arrange in the study and was only achieved for two encounters. A series of meetings, on the other hand, can allow participants to reflect on their ideas. At the start of the study, it is recommended that the researcher recognises these issues, and the effect that the selected method of engagement may have. The development of a “Mode 2” approach, analogous with that of SSM, may be useful.

9.3.2 The importance of the “relationship” dimension

The PEArL framework was originally proposed as a guide to authenticating action research field studies (Champion & Stowell, 2003), and, further, in showing how the situation of interest changes throughout the enquiry process (Champion, 2007, p.465). In later work (Cooray, 2010), it was used as part of the process to help participants consider the actual and ideal situation of interest (as it “is” and as it “ought to be”), to reveal their norms and values. In this research, these approaches were extended to help frame the enquiry at the outset, to “aid in thinking
about boundary and the participants likely to be involved in the situation of interest”. (Stowell, 2013, p.19). It is proposed that paying attention to these aspects at the start of a study contributes to its authenticity.

A final contribution is that “relationship” in the PEArL framework is affirmed as an important factor, supporting Champion and Stowell’s original assertion that it is “of prime importance” (2003, p.30) when reflecting on a study. A wide-ranging list of knowledge sharing issues was identified early in the study in the system maps (Appendix F). The relations between the participants were such that a free discussion of the issues was possible, but the soft power exercised by the senior management participants moved the study towards a focus on the way the influence of clients’ and fund-holders’ perspectives pervaded the working practices and subcultures in the organization. The implications of this insight were significant findings from the study. Use of the “relationship” dimension of the PEArL framework made it possible to reflect on the effects of the power exercised by the senior managers and how it may have influenced the outcomes, which contributed to the authenticity of the study. The participants’ power to change their situation was limited to attempts to persuade the clients of the concrete value of the knowledge-as-practice, showing the existence of a “political” boundary (Orlikowski, 2002), which the senior managers amongst the participants could not cross.

9.4 Limitations of the research

Limited access to the participants and the organization’s environment meant that the study could not be taken further than one cycle of enquiry. The method was proposed to the participants on the basis that their commitment of time would be small, and this influenced how the field study was run (Appendix D). In the event they engaged with the research to a greater extent than was considered possible at first (p.129). The ability of the researcher to observe the interactions between the participants was limited by the fact that there was only one full plenary session.

The method requires the researcher to influence the participants’ contributions as little as possible. This meant that some aspects that the researcher would have liked to pursue were not explored, the participants taking the discussion in other directions. Definitions of knowledge were discussed, but an agreement was implied, not explicit. The focus on the participants’ perspectives meant that the researcher’s interest in knowledge sharing per se was de-emphasised. But in fact, more interesting and unexpected themes, linkages and insights emerged, which informed the contributions set out in para. 9.2.

The researcher could have encouraged participants to give up more on their learning about the method, and the possibility that they would use it in a further cycle of enquiry on knowledge
sharing. Their comments on the method were made at the conclusion of the first cycle, as part of the wrap-up of the plenary session.

As the findings from this research are not generalizable in the same way as for studies into knowledge sharing undertaken in the positivist tradition, there is a question of how appropriate it is to combine its findings with the ontological models described in the literature. This question was addressed in Chapter Eight. Transferability of the findings, however, informs suggestions for further work given below.

9.5 Further work

Using an enquiry-oriented action research method oriented such as AIM, the work is context-specific and exploratory, where researcher and participants engage in cycles of learning. The use of AIM in a further programme of research is justified by the fact that it encourages participants to lead the discussion and to question their assumptions. Although there is not the same opportunity to direct the research as with other methods, this is outweighed by relatively free access to the participants’ subjective appreciations, and a further exploration of knowledge sharing and the method itself can be made. The general structure of action research is illustrated in figure 4.3 (p.50). Due to the flexible and unpredictable nature of the study, given the method, the subject of enquiry and the logistical details need to be established at the start of each research cycle and a suggested research “meta”-protocol for further work is given in Appendix I.

Recoverability (Checkland & Holwell, 1978) and authenticity (Champion & Stowell, 2003) have been suggested as ways of assessing the quality of action research, but they make no claims about whether lessons learned can be applied elsewhere; they provide a judgement about the fitness of the research. The descriptions and reflections provided for recoverability and authenticity make it possible for a reader of this research to decide whether its findings are transferable to a different situation (Guba & Lincoln, 2003). The researcher herself acts as the reader and uses this concept to transfer ideas to different settings.

One of the findings from the field study (p.160) was that the norms and values in organizational subcultures are distinct from the main organization. De Long and Fahey (2000, p.117) discuss variations in the definition of knowledge prevailing in organizational subcultures. The existence of a Knowledge Management Strategy in the organization suggests a mandated definition of knowledge, which the participants agreed and enlarged on during the study (p.154). If it were possible to carry out a further cycle of enquiry in the current organization, further insights could be sought by using participants with experience of its informal subcultures, enquiring into the difference between official and actual definitions of knowledge, and the effect this has on working
These ideas were used to inform proposed research directions, which are summarised in Figure 9.1.

**Figure 9.1: Proposed research directions**

Further investigation of knowledge sharing is to be made in other organizations for which knowledge sharing and the sharing of “best practice” is an important activity. These include umbrella organizations for charities (e.g. BOND for International Development, Community First East Hampshire), business consultancies and virtual communities. For this last the existing literature (Ardichvili et al., 2003; Chiu et al., 2006; Hsu et al., 2007) has already been examined. The same question, “What are the issues around knowledge sharing in your organization?”, will be used. The expectation is that different, context-specific, findings will emerge. A second direction is to use the findings from the current research to inform the initial questions for the other organizations, in particular, whether knowledge-as-practice is recognised in other organizations, the influence of external factors on organizational subcultures, and the influence of these subcultures on self-efficacy and motivation. The outcomes from both of these directions will be used to inform questions for further cycles of enquiry. If practicable this will take place in the same organizations, with the participants’ input on further aspects most relevant to them.
Insights which emerge as part of the enquiry process may be used as the starting point for further cycles. From the current research this may include subsystems which were not discussed in detail (e.g. “Improve the capture of tacit knowledge”) or researcher questions, such as the learning experience of those with whom knowledge is to be shared (Peet, 2012).

Investigating knowledge sharing in different organizations using AIM also gives the opportunity to contribute further to the development of the methodology as a sense-making tool. This cycle of learning about the situation of interest and about the methodology is a feature of action research. Future studies will be structured to test ideas generated from the use of AIM in the pilot studies and the field study. These include factors relating to the participants: what motivates them to take part in the studies (P from PEArL when setting up a study), how they recognise and accommodate orthogonal views in their shared appreciation, how they develop trust amongst themselves and in the researcher (r in PEArL). While these are likely to be influenced by the context in which the studies take place, an exploration of what happens when participants authenticate maps and models will also be interesting. There will be further investigation of ways to resolve the conflict between the claim of minimum intrusion into the participants’ working lives and the need to give sufficient time for full discussion of even the most relevant of the subsystems or issues.

There was some experimentation with modes of engagement, using electronic means of communication. This will be explored further to see what it would mean for the way shared understanding developed, and its effects on one-to-one and plenary modes of engagement. Avenues of exploration will be: the use of e-mail to disseminate system maps and diagrams ahead of meetings; addressing the problem of participants not being able to meet in plenary; giving the participants the facility to change the diagrams themselves; and developing a mechanism to review and agree on changes. This investigation into asynchronous communication is to be carried out in conjunction with researchers at Curry College, Massachusetts, and at the University of Portsmouth. As a corollary, further studies will examine how electronic communication in organizations and in virtual communities contributes to relationship-building between participants and affects the expression of tacit norms and values.

Action research methodology encourages the active participation of those involved, enquiring into their situations of interest, and using their own realisations to pursue this enquiry in further cycles of learning. The participants in this study also expressed interest in using AIM for further work. It is hoped that what they learned about both the method and the issues around knowledge sharing encourages them to do this.
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Appendix A: Pilot Study 1

A.1 Account of pilot study

The goal of this study was to increase the researcher’s understanding of AIM and to give practical experience in the method. Due to the time and logistical constraints, only Stage One and partial Stage Two activities were carried out.

The question was pre-defined by the supervisor:

“What key considerations should you make before undertaking action research?”

The selection of participants was also suggested by the supervisor on the basis of their experience with action research and knowledge of AIM. From a list of three individuals who had experience in action research, two were selected. A secondary selection criterion was the short time frame (two weeks) given for the work; one possible participant was rejected because the researcher believed the individual would take too much time or move the discussion away from the focus. This removed richness from the modelling. The supervisor nominated himself as one of the participants. Stage One of the exercise commenced on 17th January 2011. The location for all interactions was an open setting, a neutral area, easily accessible to all participants.

A.1.1 Study 1 process

Participant A (supervisor) is a proponent of Checkland’s FMA model (Checkland, 1985), and the relevant systems on his map were to do with establishing underlying paradigms and directions of research. Participant B’s view related to relations with participants. Participant C had had wide and sometimes varying experiences in conducting action research, and her system map was dominated by logistical considerations. At this stage, participant C had to withdraw from the exercise and her views on the composite map could not be ascertained. The exercise proceeded with two participants. A composite map (v1) was produced and reviewed in the second interactions.

During the second interactions the researcher’s questions were implicitly founded in the CATWOE mnemonic; a more explicit approach may have allowed for better understanding of the issue. Participant C had anticipated the later interaction with the composite system map, indicating which systems could be the most significant. Following revision of the composite map (v2), the preferred option would have been to have all three participants meet in a plenary session to review the relevant systems and to choose which to model. As only participant A was available at the time of the meeting, the composite map was discussed with him only. Participant B was not able to meet for some time, so the composite system map was constructed according to participant A’s comments (v3); from the researcher’s understanding of the map and A’s
comments, the relevant systems were divided into (a) theoretical/conceptual considerations about the method and a researcher’s relationship with it and (b) those which focused on carrying out action research itself (practice/operational).

Choice of relevant systems for modelling was based on discussion with participant A on and participant B’s remarks when creating her initial system map:

“Be familiar with AR methodologies and select one appropriate to the research area.”

“Identify area, purpose of research, audience for research”, although “Identify potential participants” was also important.

A root definition was prepared for the first:

“A system to know about action research methodologies through the literature, past studies, discussing with practitioners and gaining experience through practice, and as an outcome select a methodology that is conceptually (and logistically) appropriate to the aims and area of the research.”

In an individual meeting, participant B reviewed the composite system map and the root definition with the following comments:

“Know your underlying idea / paradigm” is a given if engaging with action research, and establishing it would be part of the preliminary activities.

“Be familiar with AR methodologies and select one appropriate to research area” is really two systems, one to do with assessment of approach, the other with selection.

“Identify area, purpose of research, audience for research” could also be two systems. Questions based on CATWOE analysis could have helped the researcher clarify this point.

“Identify potential participants...” is a system which belongs more in a survey methodology. The researcher suggested that clarifying the boundary would be more in accordance with AR.

This led to the revision of the map (v4) and the selection of a relevant system for modelling. The system “Explore action research methodologies” was chosen to model and the root definition was prepared:

“A system to explore action research methodologies, to determine alternative methodological approaches, by reading the literature, reviewing past studies, discussion with researchers and practitioners, and gaining experience through practice.”

There was no opportunity for the participants to review the latest version of the composite map in plenary or for them to choose the relevant system to model and to the activity models. The exercise is incomplete, and the reflections arising from it are partial.
A.1.2 Reflections on the exercise

The purpose of the exercise was to familiarise the researcher with the practice of action research and with AIM. The question and potential participants were identified before the exercise began. Although there has to be a starting point in action research, the researcher would more likely be starting with preliminary discussions in a real study.

Researcher position: The researcher’s views and ideas should not inform the investigation at all. The researcher should declare her interest and Framework of ideas (Checkland, 1991) at the start, although not necessarily to the participants in the exercise. The researcher should be “mindful” of her own perspective throughout; if the participants’ points of view steer the action research towards the researcher’s bias, the researcher recognise this. Her role has similarities with data collection in Grounded Theory (Glaser, 1978, p. 3) where the researcher is to “remain sensitive to the data” without filtering or fitting it to pre-existing hypotheses. The concept of remaining agnostic to the outcome of the research (Checkland, 1985) supports this.

Framing the question: the question in the exercise was set by the researcher’s supervisor. Another option would have been to frame a question that is appropriate to the point of view of the participants, which confirms the earlier point that there is work to be done before an AIM study can commence, relating to system boundaries, power consideration. A poorly-formulated question would become apparent by the second interaction, but the time taken in discussion could lead to squandering the goodwill of the participants (this would depend on the importance of the outcome to them). Equally a well-formulated question on a topic not of interest to the participants would delay the process. Discussions during Stage One may lead to a change in the boundary of the area of interest or to the reframing of the issue (West & Thomas, 2005).

Selection of participants: the participants were suggested by the supervisor, who named himself as one. From the point of view of the researcher, participant selection was from a pool of people who had worked together in IS research, and whom the supervisor was confident would engage in this training exercise. One feature of action research is that it encourages participants to learn from each other. In this case, where all the participants knew each other well and had worked on action research, their views were mostly in accordance. If a plenary session had been held, it is possible that the participants would have identified differences of approach and undeclared views.

One potential participant was discounted for contingent reasons, while one of the participants selected became unavailable in the course of the exercise. The exclusion of a participant limits the richness of contribution to the question, and possibly the authenticity of the research; the researcher needs to be aware of the potential bias introduced by excluding a participant on
logistical grounds. In another AIM study, the researcher’s choice of participants could be dictated by owners of the area of interest, be further suggestions from the participants themselves, or even be serendipitous. Champion & Stowell (2003, p. 28) suggest recording reasons for inclusion or exclusion of participants, to allow judgements to be made about the authenticity of the enquiry.

**Logistical considerations:** the researcher learned about the practical difficulties of arranging meetings with participants and the limited possibilities for contingency planning in the time frame of the study. The interaction was set up to be a series of short interactions, conducted individually with the participants, at times convenient to them. The non-availability or the withdrawal of participants overtook the research process and weakened outcomes. A plenary session could not be arranged, and this was a weakness at the later composite map stages and in the selection of relevant systems for modelling.

Accessibility to participants became an issue, with implications for research bias. In the initial participant selection, availability for the duration of the study could be one of the selection criteria. When one participant became unavailable, the researcher needed to consider alternative strategies to complete the exercise. One would be finding a new participant – this was not done because of the time constraints set. The researcher also discovered that it is easy for diagrams to get out of step if one participant’s views are accommodated while waiting for another to comment.

**The process:** there were a number of questions that arose as the research progressed. The researcher allowed a short time for participants to draw system maps, in accordance with AIM practice (West & Thomas, 2005, p. 431), but did not specifically mention a time limit to them. The participants all completed their maps in under ten minutes, which seemed brief, but comparable with previous studies (West & Thomas, 2005). An important feature of AIM is that the conversation between participant and researcher provides sufficient detailed descriptions of aspects of the situation of interest to allow the researcher to work on the modelling stages of the approach away from the meeting, so as to take up as little of the participant’s time as possible (West & Thomas, 2005, p. 431).

Participants commented that attempting to capture the richness of the relevant systems from the individual system maps, caused too much information to be included in the composite system maps, reducing clarity. It was suggested that the richness should be accommodated in the eventual root definitions. The researcher attempted this, but the richness of the detail caused difficulties with creating the root definitions and activity modelling also. With an interpretive method such as AIM, the researcher cannot suggest changes to the individual system map, but a
more explicit use of CATWOE would have improved the researcher’s understanding and added rigour to her questions to the participants. The researcher also learned that when preparing the composite map, not using the participants’ exact phrasing for the subsystems meant that returning to the participants for authentication of the map was especially important.

In activity modelling, the researcher found that she was including elements of other relevant systems in the model. For example, modelling the root definition relating to action research methodologies meant that the area of research also had to be included. The researcher was unsure as to how discrete these concepts from different systems had to be. The pilot study suggested that the researcher needed more practice in asking questions to clarify issues in the interactions and with writing root definitions.

For the participants to achieve shared Appreciation of the situation of interest, the composite maps and activity models should ideally be discussed in a plenary session. It is necessary, though difficult, either to hold plenary sessions or to keep individual contributions aligned in time. Where it was not possible to hold a plenary session, the onus falls on the researcher to make sure that there are opportunities for each participant to discuss possible combinations of subsystems on the composite map. As there was no plenary session in this study, there was no decision as a group about the most significant relevant systems. This was a major weakness in the exercise. As the process is a cycle of learning, relevant systems could be reconsidered on a subsequent iteration, but it would have been more effective to achieve this at the first.

**Weltanschauung:** the researcher initially misunderstood the importance of identifying Weltanschauungen in AIM. The method suggests that the participants’ worldview should be elicited for each relevant system, and again for the root definition created for the system. The researcher intuited possible world views for the individual system maps from comments made by participants in Stage One, but this was both premature and a departure from the method where the researcher’s views are not allowed to intrude on the enquiry process.

**Learning:** The researcher learned much about the practice of action research from the participants. The importance of ethical considerations was highlighted by two of the three involved. This was a demonstration of one of action research’s features, the facility to learn from the participants and to learn about action research itself. The exercise may not have necessarily resulted in learning for the participants, as they had been chosen for their experience.
A.2 System maps

Participant A system map

What key considerations should you make before undertaking action research?

- Underlying idea / paradigm
- Identify potential participants
- Select method/ology appropriate to underlying idea
- Identify area of research
- Decide time (frame) available

Participant B system map

What key considerations should you make before undertaking action research?

- Purpose of research – can AR achieve your aims?
- Methodology and methods
- Recoverability – is this sufficient for AR?
- Audience – is AR correct “type” of research
- Time constraints – recognising AR is time-consuming
- Start and exit points – can be difficult to negotiate
- Participants – accessibility and suitability
- Ethics – traditional “scientific” ethical review insufficient for AR
What key considerations should you make before undertaking action research?

- Resources required
- Purpose of the research
- Form of reporting
- Familiarity with any AR method
- Risks involved, e.g. professional relationships
- Perspectives of others
- Contextual issues
What key considerations should you make before undertaking action research?

Composite map (v 1)

- Identify potential participants, taking into account access, suitability, contextual issues.
- Identify area and purpose of research, audience for research.
- Be familiar with AR methodologies and select one appropriate to the research area.
- Know your underlying idea / paradigm.
- Work out logistical considerations: time frame, resources, form of responding / recording, start and exit points.
- Consider factors affecting quality of research: ethics, risks, recoverability, perspectives of others.

Composite map (v2)

- Identify potential participants, taking into account access, suitability, contextual issues.
- Identify area, purpose of research, audience for research.
- Be familiar with AR methodologies and select one appropriate to the research area.
- Know your underlying idea / paradigm.
- Work out logistical considerations: time frame, resources, form of responding / recording, start and exit points.
- Be familiar with concepts of AR.
- Consider factors affecting quality of research: ethics, risks, recoverability, perspectives of others.
What key considerations should you make before undertaking action research?

- Identify audience for research
- Clarify boundary of research area
- Determine goal (purpose) of research
- Consider ethical factors relating to research
- Select AR methodology or design methodology appropriate to the purpose of research
- Know your underlying framework of ideas with which AR approach is congruent
- Explore AR methodologies
Appendix B: Pilot Study 2

B.1 Account of study

Bearing in mind the logistical and methodological lessons from the first study, the second research study was undertaken for further practice in May and June 2011. This study looked at how to help new lecturers adopt the departmental standard for the marking of undergraduate final year projects. Projects in the department are double-blind marked by the student’s supervisor and by a moderator, a second member of staff appointed to provide balance and a second opinion. The topic was chosen because it was an issue in the department, which had emerged during project marking. The five new lecturers and two recently joined lecturers came from a number of institutions with different standards, and there were varying amounts of teaching experience amongst them. New lecturers experienced difficulty and stress when determining mark level, despite individual project training.

The topic was investigated during the marking period, which meant that new lecturer experiences and thoughts about them were fresh in their minds. The plenary meeting was co-opted into an advice session for the new lecturer participant, potentially transgressing or negating the enquiry focus of the study. All participants were from within the department and actively engaged in project marking, and one participant had responsibility overall for projects. The timescale for the study is given in Table B.1.

<table>
<thead>
<tr>
<th>Participant</th>
<th>1st meeting</th>
<th>2nd meeting</th>
<th>Comp map session</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant A</td>
<td>17.1.11</td>
<td>24.1.11</td>
<td>31.1.11</td>
</tr>
<tr>
<td>Participant B</td>
<td>19.1.11</td>
<td>28.1.11</td>
<td>18.2.11</td>
</tr>
<tr>
<td>Participant C</td>
<td>19.1.11</td>
<td>Withdrawn from exercise</td>
<td></td>
</tr>
</tbody>
</table>

One of the researcher’s responsibilities in AIM is to provide space for the participants to give up their thoughts and assumptions about the situation of interest. In this study, the researcher had long experience of the topic, and the danger was that she would contribute and bias the process. The researcher had identified the issue as an important one using her past experience in the project coordinator role, and had already discussed some specific issues with new lecturers. She was concerned about the possible influence on the study, but the subsequent interactions between the participants appeared to override this. A conscious decision was made not to intervene, or if this proved impracticable, to record where an intervention was made. This study was an opportunity to consolidate understanding of the method, to focus more on the interactions between the participants and to determine how far it was possible to maintain a neutral perspective despite having this significant domain knowledge.
B.1.1 Commencing the study

The researcher considered the uses of the CATWOE and PEArL frameworks at the start of the study. She wondered whether they were mutually exclusive or whether they could be used at different times in the study. In this, she was experiencing some confusion in the version of AIM to be used. In the early literature about AIM, various SSM tools were used to strengthen the method as it was carried out, including CATWOE, root definitions, activity models (West et al., 1995, 2001). The PEArL framework, proposed (Stowell & Champion, 2003) for establishing the authenticity of the research, was used in later work (Stowell & Cooray, 2006) to help identify what is the case and what ought to be the case as the study progresses. The researcher developed some understanding of these issues during the study and experimented with the use of the PEArL framework during the process, experiencing some logistical and conceptual difficulties that are described in para. 5.3.3. In preparing for the study, the researcher attempted to use the PEArL framework to structure thinking about how it would be conducted.

The participants were chosen to express the range of experience and authority in project marking. The number was limited to three to make plenary sessions logistically possible. The new lecturer had had no teaching experience prior to joining the department. The project coordinator had joined the department from a different institution two years previously, and had been project coordinator for one year. The experienced lecturer had had project coordinator responsibilities for a distance learning cohort, and several years’ experience of project marking.

Engagement: The study was conducted in the project marking period and the aim was to complete it before the Unit Assessment Boards (UABs), where marks are ratified, after which time the participants were likely to be away. A succession of meetings, individual and in plenary, was planned. Initially the researcher thought that the timing of the study would have an influence on the result, as insights from the marking process would be brought in. However for the new lecturer, it is possible that she would not have a chance to reflect on her experience.

Authority: The researcher was concerned that her experience in the role of project coordinator might influence the outcome. To mitigate this, she planned to make the AIM process clear and be mindful about not introducing bias. This view of “Authority” stemmed from thinking about using PEArL to influence the study process. The discovery of Authority for the topic was left to the participants.

relationship: In relationship, we examine “How power has been expressed in the situation”, with a recognition of victims/beneficiaries. This, and Weltanschauung discovery, was left to the study stage: “examining the individual system map using CATWOE” – which the researcher considered needed to be done at the time.
**Learning**: The researcher stated that the intended consequence was that the participants would appreciate each others’ viewpoints and that a proposed set of actions could be suggested and possibly agreed. This was a general intention – learning perhaps should not have been considered at the start of the study, nor should and the researcher have pre-judged what the outcome was likely to be.

### B.1.2 Study 2 process

The researcher set the initial question:

**How can new lecturers align their project marking to the department standard when making undergraduate engineering projects?**

The researcher considered several factors when setting the question: whether it should be general or specific; how it could be framed so as not to lead the participants; and whether having some background knowledge influenced the question choice. Question setting appeared to be an important stage, although any question can be used as a jumping off point to explore participants’ real concerns. Cooray (2006), however, used discussion with significant actors and rich pictures to establish the situation before deciding on the question.

The associated diagrams are in sections B.2 to B.4.

#### B.1.2.1 Stage One: System map

The relative experience of the participants was demonstrated in individual meetings. As she drew her system map, the experienced lecturer reflected on the difference between entirely new lectures and those who had come to the department from other institutions. The new lecturer took the opportunity to ask about a marking problem she was having, and how to express this on the diagram (the researcher discussed the problem briefly and generally, and brought the lecturer back to the diagram). The project coordinator drew two much more simple maps, reflecting his roles as project coordinator and relatively new lecturer.

The second round of individual interviews was almost as short, the participants further explaining their initial ideas. In the versions of AIM, CATWOE is used to structure questions, but at this point the researcher had not determined whether it was appropriate to use it at this stage or at the composite map stage. The researcher was able to detect two possible Weltanschauungen belonging to the new lecturer: Concern about the ability of direct entry students to engage with the project on the same footing as home students, and the built-in unfairness of the system, and the general confusion about marking standards and the need to reconcile the different aims of maintaining standards and being fair to the students.

The plenary session to discuss the composite map was lengthy and illuminating for the
participants. From the outset, the experienced lecturer took the lead and drove the discussion of the subsystems, disagreeing with the project coordinator on moderator allocation, from the perspective of her experience. The session became one where the new lecturer discussed her marking problems in detail and the experienced lecturer gave advice (some general advice was given by the researcher). The discussion started to focus on the supervisor-moderator pairing and the problems in marking variation this caused for the new lecturer. The project coordinator remained diplomatic throughout. His attitude was that there are no right answers, but different schools of thought. His views appeared to be informed by his past year in post, but also having been a new lecturer recently, and with experience from his previous institutions. During the discussion, neither CATWOE nor PEArL were used explicitly as part of the process, although the researcher noted aspects of the discussion where they were implicit.

Two subsystems were chosen for modelling:

“Pair new lecturers with experienced, consistent markers.”

“Take into account factors that cause variation in marking”

B.1.2.2 Stage Two: Root definition and activity model

For the purposes of the study and taking into account the timescales, the “Pair new lecturers” subsystem was modelled. The researcher felt that the “Take into account factors” subsystem was more of a system in itself, and that the more specific subsystem would shed light on the problem for further iterations of AIM. However this decision was not discussed with the participants.

The researcher used CATWOE to help in defining a root definition (Table B.2) and developed the activity model.

The views of the participants about the root definition were sought in the plenary meeting to discuss the activity model. Ideally, this should have been done before the meeting, but the participants were not available. The researcher would have welcomed the opinion of a more experienced practitioner to review the root definition and activity model, as none of the participants had experience in Soft Systems methods.

B.1.2.3 Stage Three: Discussion of activity model

The project coordinator was unable to be present at this plenary meeting to discuss the root definition and activity model. The researcher used the PEArL framework to help the participants distinguish between in the situation as it is and how they feel it ought to be, to see what issues arose when applying it in this way, and as a learning exercise.
Table B.2: Development of “Pair new lecturers” root definition

<table>
<thead>
<tr>
<th>C</th>
<th>A</th>
<th>T</th>
<th>W</th>
<th>O</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>New lecturer</td>
<td>Project coordinator</td>
<td>Lack of knowledge or experience of the standards expected in project marking -&gt; alignment with departmental project marking standards and ability to mark consistently with them Computing.</td>
<td>It is important that new lecturers are inducted properly into good marking habits, for the sake of the project students and for consistency of marking in the department.</td>
<td>Head of School.</td>
<td>Project supervision and marking within the School of Computing</td>
</tr>
</tbody>
</table>

**Root definition:** A system to produce project supervisor/moderator pairings, by putting new lecturers with experienced, consistent markers, to ensure that new lecturers are aligned with the departmental project marking standards and that marking consistency is encouraged.

In the activity model discussion there was much reference to the new lecturer’s issues with her moderators, and advice from the experienced lecturer. The experienced lecturer’s viewpoint was that everyone wants good students to supervise. The new lecturer’s viewpoint was that marking variation throughout the department causes difficulties for new staff. The Weltanschauung for the root definition and activity model was not explicitly considered. The participants agreed on a recommendation that project supervisor and moderator assignment should be from within the research group appropriate to the project topic, for congruity of marking approach. The researcher encouraged them to consider the pairing activity through the lens of PEArL. Although they made a few comments about the existing situation (the existing relationships were considered to lead to uneven power balance, even abuse of process), the participants concentrated on what ought to be the case, led by the experienced lecturer.

At the end of this meeting, the researcher perceived the following perspectives. The experienced lecturer appeared to be thinking strategically: improving the situation would lead to improved staff and student experience, meeting global (university) learning and teaching aims of student experience and staff satisfaction. For the new lecturer, the perspective was more operational: eliminating variation in marking is desirable, using different arguments to convince different people and to overcome resistance to change.

In a separate individual meeting with the project coordinator, he was induced to talk about the situation as it is and how it ought to be. In terms of reaction to the other participants, he felt that
in the real world placing so much emphasis on the research group would be impracticable, although it ought to be an element to be considered. He re-emphasised his perspective from the previous plenary session, that combining markers in different ways (within reason) for supervision improved staff development. An overall discussion of views in plenary was not possible, but is needed for a judgement on the feasibility of action. The missing participant’s contribution needed to be discussed with the other participants.

### B.1.3 Reflections on the second study

For this study, the PEARL framework was used to reflect on the lessons learned; it was interesting to see how the thoughts about the PEARL constituents changed in the course of the study; this change matches the observations of Champion (2007).

**Reflection on participant choice.** The experienced lecturer had had previous problems with paired moderators not understanding her subject area and failing to appreciate her students’ work. This viewpoint had a significant impact on the study. The new lecturer was having marking consistency problems with her moderators as the study progressed. This brought richness to the discussions and highlighted some of the power issues in the problem domain. However, in hindsight, the inclusion of a “software engineer” participant would have been more representative of the department as a whole and, while discussions would have been more complex, appreciation of each others’ worldviews would have provided more insight into the problem and possibly more workable relationships between the participants. Bednar (in Stowell, 2012) comments about the researcher’s perceptions of the effects of participant personality, which can be elucidated by the use of PEARL at the different stages of the study.

**Reflection on engagement.** Despite the commitment of the participants to the study, the participants experienced problems with finding time for it. The new lecturer was working from home for parts of the time, and the experienced lecturer was abroad. The project coordinator’s involvement was limited towards the end of the period, in that he was preparing for the Unit Assessment Board. However, momentum was kept up for individual meetings, and a lengthy plenary session was possible to discuss the composite map. Due to the constraints on the project coordinator, the discussion and comparison of the activity model could only be conducted between the new lecturer and the experienced lecturer. The study is unfinished in this respect; the views of the project coordinator should have been sought, and, from the previous plenary, are likely to have been different from the other two. The researcher did not have the opportunity to observe whether a shared appreciation had developed. This is the main failing of this study. The concern about the new lecturer not having a chance to reflect on her experience before contributing to the study was misplaced, however. The new lecturer was well able to articulate her concerns and discuss them.
**Reflection on authority.** The inclusion of the project coordinator in the participants meant that authority to make some change to the situation was built in to some extent. His influence on the views of the other participants was less apparent, this view strengthened by his emollient personality. The experienced lecturer had the advantage of several years over this individual, and acted as project coordinator for a separate set of student cohorts. The new lecturer was independent-minded and task-focused, concerned only to do what was right. However, in the discussion of the activity model, the participants acknowledged the need to take into account the ultimate authority of the Head of School and possibly the research group heads. As consensus is important to the department, the authority of the project coordinator is built very much on trust, and discussion and persuasion is needed for change to be possible.

**Reflection on relationship.** The researcher had some difficulty in distinguishing between Authority and relationship. She worked with Authority being “having the formal power to change or influence the problem situation”, and relationship being “relations between the participants and the researcher, and between the participants and the Authority”. As authority in this study is diffused over several roles and individuals, the consideration of relationship is complex. The researcher perceived the influence of commodities of power (Stowell, 1989, 2000), one participant capitalizing on her greater experience, with other participant ceding this. Neither participant used this position in a formal way – the researcher was aware of the cues provided by the discussion. The new lecturer’s ideas and insights were powerful, but due to inexperience she played a subordinate role in the enquiry. The relationship between the researcher and the participants added complexity, as she had held the position of project coordinator for several years. At times the new project coordinator and the experienced marker deferred to her, and she had to move the discussion back in their direction. Another feature of the relationship was the advising role which the experienced lecturer and (carefully noted) the researcher played for the new lecturer. This came out mostly clearly in the plenary sessions. The researcher allowed this advice-giving to take place, then asked questions relating to considerations of the actual and ideal situations to return the discussion to the participants. A further comment should be made about the relationship between the researcher and the project coordinator, which had been established before the study, stemming from the researcher’s past experience with projects and her mentor role during the recent handing over of responsibilities. During the discussions, it appeared that the project coordinator was not constrained by this. He demonstrated his independence by discussing the initiatives he had introduced (e.g. in the pairing of supervisors and moderators) and was not silenced in this study.

**Reflection on learning.** The researcher gained more experience in using the PEARL framework to enrich the enquiry process, but lacked the experience to refer to it explicitly. When working with
strong personalities, the researcher’s “listening” skills were needed to find cues to turn the participants towards the “is” and “ought” discussions. The learning outcomes for the participants appeared to be more clear. The project coordinator gained an insight into the difficulties facing a new lecturer, and of the mark variation problems in the department. This eventually led to the setting up of a staff meeting to discuss the issues. The new lecturer felt more supported in the difficult negotiations she was having with her moderators, and was able to articulate her confusion about marking standards more clearly. For her, gaining an understanding of the worldview of the experienced marker helped to set her experience in context: “I wish I had known that before!” For the experienced lecturer, there were fewer surprises, but the opportunity for her experiences to be validated appeared to be welcomed.
B.2 System maps

Individual system map: experienced lecturer

How can new lecturers align their project marking to the department standard?

- Example projects for each category of marks with their marking sheets
- Clarify marking scheme as paper and online versions are different
- Clarify how to take into account the difficulty of the project / challenging nature of the topic
- Distinguishing between student characteristics (e.g. direct entry, international) and marking standards
- Clarity among the staff about the contribution of the artefact

Individual system map: new lecturer

How can new lecturers align their project marking to the department standard?

- Project coordinator
- 2nd marker
- Post marking discussion
- Mark own projects after moderated ones
- Focus on grade descriptors and ensure project contains the one being ticked
- New lecturer - mark in a script marking exercise
- Transferred lecturers discuss mark form with coordinator
- Mark with experienced consistent marker
- Project coordinator to pair them with others who use the marking forms "properly": category comments supporting marks
- Compare marking form with previously used mark forms
Individual system map: project coordinator

- Project unit documentation
- VLE
- Find resources on marking
- Talk to project coordinator
- Talk to colleagues
- Post-marking discussions with the second lecturer

How can new lecturers align their project marking to the department standard?

Composite map

- Pair new lecturers with experienced consistent markers who use good practice when marking
- Provide example projects with their marking forms
- Undergo training in marking a project
- Use grade band descriptors when marking
- Be made aware of, and use, project marking guidelines and resources
- Hold post-marking discussions with project coordinator and second marker
- Take into account factors that cause variation in marking
- Address consistency issues in marking among existing staff

How can new lecturers align their project marking to the department standard?
B.3 Root definition

Root definition for subsystem: Pair new lecturers with experienced consistent markers

CATWOE analysis:

C – New lecturer

A – project coordinator

T – unpaired new lecturer supervisors -> paired with quality moderators

W – it is important that new lecturers are inducted properly into good marking habits, for the sake of the project student and for consistency of project marking in the department

O – Head of School

E – Project supervision and marking within the School of Computing

Root definition:

A system to produce project supervisor/moderator pairings, by pairing new lecturers with experienced, consistent markers, to ensure that new lecturers are aligned with departmental project marking standards and that marking consistency is encouraged.
B.4 Activity model

Activity model for “Pair new lecturers with experienced consistent markers”
Appendix C: Pilot Study 3

C.1 Account of study

Overlapping with the second study, the third study was conducted to experiment further with logistical and methodological aspects of the method, and to explore a topic where the researcher was on a more equal footing with the participants. The situation of interest was how group work assessment could be designed so as to be fair to students, to encourage participation and reward individual effort in the group. The topic was chosen because assessed group work has been a source of complaint by students over the years, particularly in years when marks count towards degree class. Marking fairly has also been a concern of staff. Students’ views about group working had been investigated from a Grounded Theory perspective in a research exercise two years ago by the researcher and a colleague and most of the departmental staff had opinions on this topic, based on their experiences.

In respect of the boundary of the study, the focus was on assessed group work and the participants had experience of this at all levels of teaching. Assessed group work comes in many varieties and although the overall aim is the same, the nuances depending on the year level and the learning outcomes of the unit can add up to diverse motivations and practices, amongst staff and students. The study concentrated then on the setting of assessed group work, to try and exclude, as far as possible, issues about carrying it out.

Table C.1 gives the timescale for the study. The system maps, root definition and activity model are in sections C.2 to C.4.

### Table C.1: Pilot study 3 timescale

<table>
<thead>
<tr>
<th></th>
<th>1\textsuperscript{st} meeting</th>
<th>2\textsuperscript{nd} meeting</th>
<th>Plenary</th>
<th>AM discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit coordinator, postgrad/undergrad units</td>
<td>20.5.11</td>
<td>1.6.11</td>
<td>8.6.11</td>
<td>16.6.11</td>
</tr>
<tr>
<td>Director undergrad programmes, unit coordinator for year 1 unit containing group work</td>
<td>20.5.11</td>
<td>26.5.11</td>
<td>9.6.11</td>
<td>17.6.11</td>
</tr>
<tr>
<td>Project coordinator (HND – group projects)</td>
<td>24.5.11</td>
<td>25.5.11</td>
<td>8.6.11</td>
<td>-</td>
</tr>
</tbody>
</table>

C.1.1 Commencing the study

This study differs from the second study in that a more conscious attempt was made to use the
CATWOE mnemonic and PEArL framework in the interactions with the participants. PEArL was also used at the start of the study to clarify how it should be conducted.

**Participants.** These were chosen to represent experience in teaching units with significant elements of assessed group work over several year levels. Lecturer X teaches a core 1st year programming unit and is also the undergraduate programme coordinator. Lecturer Y also teaches a core 1st year programming unit and has extensive experience of group work in HND units, and as a director of a systems analysis consultancy. Lecturer Z teaches 3rd year units and masters units, where group work includes much on-line work. One potential participant who should have been involved was the lecturer fulfilling the role of assessment manager. She has an overview of group work setting and experience of conducting assessed group work in her own units. In the timescale, it was impossible to involve her in this cycle because of her work commitments. In a subsequent cycle of the enquiry process, her input would enhance the learning.

**Engagement.** The topic was investigated during the marking period, meaning that participants were generally available but for a short time. It was known that one of the participants was taking extended leave just before the UAB, giving urgency to the planning of meetings, and plenary sessions were difficult to arrange.

**Authority.** As the study was initiated by the researcher, the issue of authority was not felt to be important at this stage. The researcher has no authority over the participants, and the role of undergraduate programme coordinator does not involve direct managerial responsibilities over the other participants. In discussion of outcomes, however, the department’s management (Faculty included) would endorse or reject any suggested changes.

**relationship.** All participants had good working relationships with each other at the start of the study. Although lecturer X was the coordinator of undergraduate programmes, his consensual management style, combined with the outside interests of lecturer Y and the Masters focus of lecturer Z meant that the researcher did not perceive pre-existing power conflicts. In other studies, this might not be possible to know.

**Learning.** The omission of the assessment manager as participant means that the learning from this cycle is restricted to unit-level realisations about logistics and the characteristics of students. However is mitigated to some extent by the inclusion of lecturer X in his undergraduate programme coordinator role.

**C.1.2 Study 3 process**

The researcher set the initial question based on her past research into student engagement with group work. In this case, the context is of assessed group course works set at all levels and the
issues students face with social loafers, non-attenders and other difficulties. There is a concern about the fairness of marking, especially at levels where unit marks contribute to degree class. Unit lecturers may not have insight into group dynamics and often do not plan to take these into consideration when marking. The question was:

“How can assessed group work be designed so as to be fair to students?”

The associated diagrams are in Appendix C.

C.1.2.1 Stage One: System map

In the first interview, all three participants produced system maps within ten minutes. Lecturers Y and Z did so with a minimum of discussion beyond that needed to clarify the subsystems. Lecturer X took the opportunity to have a wide-ranging reflective discussion about his practice, using the interview as an opportunity to chat with a “trusted” colleague. However, this meant that the discussion ranged away from the question, into the conduct of group work and the relations of the lecturer with the students, when he was encouraging them to participate in a peer marking process.

In the second interview, the discussion of the individual system maps, the researcher used the PEArL framework explicitly to structure the discussion, following Cooray (2010). She attempted this first with lecturer Y. The interview was structured to look at each subsystem on the system map and to determine the PEArL factors. This was difficult to do and placed artificial constraints on the discussion. The free-ranging discussion which gives richness to the process was to some extent stifled and the participant appeared uneasy with the approach. Subsequent advice from the supervisor was that natural language questions should be used to prompt the discussion. The focus should be more on using the technique to distinguish between “is” and “ought”, possibly at the plenary stage. With lecturers X and Z, the opposite happened. With lecturer X, the discussion was free-ranging, not constrained so much by using PEArL, but concentrating for each subsystem on the situation as it is and as it ought to be. With lecturer Z, the discussion was again free-ranging, with “is” and “ought” not being specifically considered. Although the researcher consciously tried not to inject her own ideas into the discussion she concluded that she needed further practice with interviewing using questions based on the PEArL framework.

The plenary session to discuss the composite map was with lecturers Y and Z, lecturer X not being available. His comments, generally in agreement with the others, were elicited the following day. The participants reviewed each subsystem and commented on the situation as it ought to be. There was some discussion of the existing situation and the ideal situation but not in terms of PEArL. The subsystems chosen to go forward and model were:

“Require and monitor evidence of participation in group work”
“Allow for peer evaluation of contribution during group work and during marking”.

C.1.2.2 Stage Two: Root definition and activity model

Taking into account the timescale and availability of the participants, only one subsystem was modelled, by their agreement: “Require and monitor evidence of participation in group work”. “Allow for peer evaluation...” is allied to this subsystem and could be thought of as a subset.

The researcher used the CATWOE mnemonic to refine the root definition (Table C.2), which was checked with the participants in the next meeting.

Table C.2: Development of “Require and monitor evidence of participation in group work” root definition

<table>
<thead>
<tr>
<th>C</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Unit coordinator</td>
</tr>
<tr>
<td>T</td>
<td>Inconsistency of student engagement with group working -&gt; students engaging with and contributing to the work of their groups</td>
</tr>
<tr>
<td>W</td>
<td>Student contribution to group work is important for the sake of fairness to their fellow group members, and for their continuing progress on their course.</td>
</tr>
<tr>
<td>O</td>
<td>Head of School</td>
</tr>
<tr>
<td>E</td>
<td>Taught units within the School of Computing</td>
</tr>
</tbody>
</table>

Root definition: A system to provide evidence of participation in group work, by setting the work to require participation in group tasks and to monitor student engagement with the task, in order to ensure that group members perform.

As with the companion study, the check should have been carried out before modelling the activities, but the participants were not available. A review of the root definition by an experienced practitioner may have helped improve it.

C.1.2.3 Stage Three: Discussion of activity model

At this point, lecturer Y took extended leave and the sessions continued with lecturers X and Z. The introduction of the assessment manager as participant was considered, but her work load did not permit this. The introduction of a new participant and the adjustment of the shared perspectives arrived at by the original participants would potentially take up more time and delay the study. It was difficult to bring lecturers X and Z together at the same time so they were interviewed separately about the activity model. For both lecturers, it was necessary to explain the tools used and to allow them to view and think about the diagram. The researcher also
explained the purpose of the meeting – to review the activity model using the PEArL framework and to suggest action which would be feasible in the department. Lecturer Z reviewed the activities as actual and the ideal, and much of the PEArL related content was implicit in what she said. She felt that three activities were very closely related and had interchanges with two others, which could imply either that the activities had been teased out sufficiently or that the subsystem was ambiguous. Her worldview as: The students should engage with group work as part of the learning process, to engage in deep learning.

Lecturer X again took a reflective, “stream of consciousness” approach, based on his experience of many past situations and initiatives, but it was more possible to structure the session according to the PEArL framework, both discussing the ideal situation, the participants who would be involved and the nature of their engagement. This time the researcher did not discuss the other participant’s view until the end – lecturer X noted it but had no particular comment. Their opinions were orthogonal rather than opposing; they were not so different that resolving conflict was necessary. This prompted the researcher to think about participant interaction on a continuum from complete agreement to irreconcilable difference, and how the researcher might reflect on it depending where the discussion sat on the continuum. As far as it was possible to determine X’s Weltanschauung, it was that his practice is experientially based, and he considers what has worked before and the responses of the students he is teaching.

At the end of this exercise, the researcher felt that she had increased experience and clarity of ideas about the method, but that there were still questions. Another review of the literature helped to determine where and why the PEArL framework is used, the role of CATWOE vis-a-vis PEArL when used in the process, and a better understanding of where it would be appropriate to establish Weltanschauungen – for the participant or for particular activities.

C.1.3 Using PEArL to reflect on the process

Reflection on participant choice. All three participants had considerable experience of a range of group work techniques and had sufficient command to change group work requirements where necessary in their units. They were in a position to assess the effects of different group work assignments over a period of years, and had fund of “war stories” which gave richness to their discussions. The major omission was the assessment manager, who had greater experience of using the assessment regulations. In another enquiry cycle, she would have been invited to participate.

Reflection on engagement. The study was completed in the time available and there were no difficulties with seeing the participants individually. However, plenary sessions were difficult to arrange: lecturer Y is a part-time lecturer who was also away on a workshop during the study
period, and she went on extended leave as the study was concluding. The only "plenary" session possible was between her and lecturer Z to view the composite system map; all other meetings were held on a one-to-one basis. Arriving at agreement or accommodating differences between individual perspectives could have been more difficult because of this, had the participants not been in broad agreement about the topic. The explicit use of the PEArL framework in the second interview with lecturer Y did not go as well as hoped, possibly because of the inexperience of the researcher in structuring questions based on PEArL. The participants used their “war stories” to cast light on the question, but it was occasionally difficult to keep them from carrying on to discuss other aspects of group work.

**Reflection on authority.** Although the undergraduate programme coordinator was included amongst the participants, his role is one of oversight, and authority to act ultimately rests with the University, interpreted in departmental instructions. For the purposes of this study, lecturer X was an equal participant. As the study was an enquiry into assessed group work setting, with no urgency to action, the question of authority was not of prime interest.

**Reflection on relationship.** Both the participants and researcher are experienced lecturers and the relationship was equal as regards the topic. All participants were tolerant of the efforts of the researcher to use AIM. Had the participants been able to discuss the activity model in plenary, it is possible that more aspects of their relationships to each other and to the researcher would have emerged. The study became a de facto exercise in seeing how the views of the participants could be exchanged when they were not meeting in plenary. There were similar issues for the initial meetings of the main research study.

**Reflection on learning.** The researcher learned about the practical and methodological problems involved when a study is conducted without plenary sessions being possible, and understood some of the reasons why AIM has developed to include plenary sessions. It was difficult to judge the relationships between the participants or to observe them sharing understanding in one-to-one settings. The participants took the opportunity to discuss their different experiences of setting group work and to agree on the importance of various aspects.
C.2 System maps

Individual system map: Lecturer X

How can assessed group work be designed to be fair to students?

- Peer rating of contribution
- Peer marking
- Self – allocate individual component
- Allocate groups to students if comparable ability

Individual system map: Lecturer Y

How can assessed group work be designed to be fair to students?

- Ability to define roles
- Evidence of participation, e.g. discussion board
- Marking allows for different contributions
- "Lego" approach
- Tutor check stages to monitor progress
- Elements of individual work
Individual system map: Lecturer Z

Elements of individual work / in-group work – if practical in the task
Scope for students to evaluate rest of group – at particular stage so can make up

How can assessed group work be designed to be fair to students?

Range of tasks in group work – can different learner/worker types shine?

What’s balance between group work and individual work (overall unit)

Composite map

Set up elements of individual work, appropriately balanced with group tasks

How can assessed group work be designed to be fair to students?

Allow element of choice in role & task to students
Allow for peer evaluation of contribution during group work and during marking

Set up marking to allow for different contributions

Require and monitor evidence of participation in group work

Allocate students to groups of comparable ability
C.3 Root definition

Root definition for subsystem: Require and monitor evidence of participation in group work

CATWOE analysis:

C – Students

A – Unit coordinators

T – Non-engaged or loafing students -> students engaging fully with group work

W – students should be encouraged to participate in group work so that their learning can be assessed and so that makers can be fair in acknowledging the contribution of their fellow group members

O – Head of School

E – Setting and marking of group work within the School of Computing

Root definition:

A system to provide evidence of participation in group work, by setting the work to require participation in group tasks and to monitor student engagement with the task, in order to ensure that group members perform.
C.4 Activity model

Activity model for “Require and monitor evidence of participation in group work”
Appendix D: Field study proposal

AIM study in DSTL

Study Aim

The study will use the Appreciative Inquiry Method (AIM) to explore the question ‘How knowledge sharing is seen by managers’ and will be undertaken at the Defence Science & Technology Laboratory (DSTL), Portsdown West.

AIM has been chosen as the study methodology for two reasons. First, to revisit Sir Geoffrey Vickers’s concept of Appreciation and discover what lessons can be learnt about the underlying ideas of the method, and second, through the active participation of those in the situation of interest to gain understanding of what knowledge sharing means to them.

AIM has been chosen because of the minimum time commitment of the participants, it is readily understood and enables those involved to deliberate the feasibility of the outcome before action is taken.

Description of methodology.

AIM uses a series of light-touch interactions with participants and consists of three phases. Phase I elicits the participants’ shared appreciation of the significant elements in the area of interest. Phase II is the production of a composite map which represents the shared view. In Phase III, participants are invited to discuss the map and the resultant conceptual models, to identify actions to improve which are feasible in the context of the organisation.

Involvement of DSTL staff

We would like to have a minimum of five participants which it is estimated will require the total estimated time of 8 hours participant time.

DSTL staff will be involved all Phases of the study. Phase I comprises a short activity to gain understanding of the research question. Interview duration is approximately: 15 minutes per person in phase 1; 20 minutes for phase 2; and 30 minutes for phase 3. It is intended to run phase 3 as a plenary session if possible.

Timetable for study

The timetable proposed depends on availability of DSTL staff and the possible requirement for security clearance for the researchers. The following dates are estimated and intended as a guide only. The actual dates will be determined following a discussion with DSTL.

Length of study – 12 weeks

Preliminary meeting: w/s May 23rd 2011
Phase I interviews to be conducted in three tranches:

Tranche 1: 30th May – 17th June 2011
Tranche 2: 20th June – 8th July 2011
Tranche 3: 20th July – 5th August 2011

Phase II model development: 8th August – 26th August 2011
Phase III discussion and report: 30th August – 21st September 2011

All material gathered is in confidence and is for the express use of the research. Should there be data that is considered specific to [redacted] this will not be published without agreement.
## Appendix E: Field study meeting dates and durations

<table>
<thead>
<tr>
<th>Participant</th>
<th>System map preparation</th>
<th>Composite map review</th>
<th>Root definition plenary</th>
<th>Activity model plenary</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>28 Sept 2011 10 minutes</td>
<td>9 Nov 2011 30 minutes</td>
<td>13 Jan 2012</td>
<td>3 Feb 2012 60 minutes</td>
</tr>
<tr>
<td>B</td>
<td>31 Aug 2011 8 minutes</td>
<td>4 Nov 2011 40 minutes</td>
<td>2 Dec 2011 90 minutes</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>31 Aug 2011 8 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>26 Oct 2011 10 minutes</td>
<td>11 Nov 2011 27 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>7 Sept 2011 10 minutes</td>
<td>12 Nov 2011 55 minutes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F: Field study system maps

Individual system map: Participant A

What are the issues around knowledge sharing in [the organization]?

- Inadequate succession planning
- Lack of funding to document work properly
- Inefficient knowledge management
- Poor knowledge of who in organization may want something
- IPR with industry
- Attuness account to industry
- E&G external knowledge
- Inadequate succession planning
- Security compartments
- No real library service
- Physical separation of staff
- Corporate IT/search
- Organizational network
- Knowledge clarity
- Knowledge of
- Intellectual/service

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What are the issues around knowledge sharing in [the organization]?

- Firewall
- Connectivity
- IP
- Security
- Too many forms
- Need to know culture
- Lack of opportunities to share
- Recognition of value
- Available time
- Difficult to qualify / quantify
- Sci and Tech K managed, Business Intelligence unmanaged
- IT
- Lack of centralised process
- Lack of money to deploy new tools
- Software tools
- Lack of tools used as excuse for not doing
- Little/minimal exploitation
- Scientists going onto next problem not recording outcomes
- Hard to find out who did what in the past
- Lack of understanding between knowledge and information sharing
- Don’t have a way of identifying who is doing what now
What are the issues around knowledge sharing in [the organization]?

- Too much of it unless specific
- Multiple systems
- Storage
- Lack of opportunities to share
- Accessibility
- Currency
- Duplication
- Sources of knowledge
- Structuring of knowledge
- Stove-piped in silos
- Asset of knowledge as resource
- Waiting
- "when you want it"
- Timeliness
- "What is there"
- Ownership / IPR
- No incentive to share
- Appraisals of knowledge
- No reward for sharing
- No sanction for not sharing
- Granularity
- Knowledge maintenance
- Loss through retirement
- Little/minimal exploitation
- Difference between what is knowledge from data/info
Composite map

What are the issues around knowledge sharing in the organization?

- Make decision makers/funders aware of the benefits of sharing knowledge effectively
- Reduce barriers to knowledge sharing arising from the “need to know” culture
- Improve effectiveness of current knowledge sharing practice
- Provide succession planning
- Improve opportunities to determine who has knowledge and who needs access to it
- Distinguish between information & knowledge
- Improve the capture of tacit knowledge
Appendix G: Field study root definition tests

A Determined before the root definition plenary session

Subsystem: Distinguish between information & knowledge

Root definition: Distinguish between information and knowledge in the organization, encouraging staff to see the benefits of doing this as a means of improving the efficacy, efficiency, and effectiveness of work outcomes.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Organization employees who need to be aware</td>
</tr>
<tr>
<td>A</td>
<td>Chief Technology Officer – this is possibly a matter of policy</td>
</tr>
</tbody>
</table>
| T | Could be, setting policy at a strategic level, or making a day-to-day decision on whether an item is information or knowledge. This transformation could be about establishing the criteria for what is information and what is knowledge in the context of the organization. Already, people are distinguishing between the scientific and technical domain, where knowledge management is already practised, and the business intelligence domain.  
Input = difference between information and knowledge  
Output = decide more realistically, depending on what criteria? |
| W | There are times when it is important to know which you are talking about.  
Participant A: This is particularly a problem when worldviews of the services/accounts/procurement board and the operating departments are different: services want “the answer” – as information; scientists want to capture the knowledge. Younger staff don’t see a problem because they use Google a lot.  
Participant D: knowing the difference (semantically) doesn’t matter that much to people |
| O | CTO again? Ownership of the problem though belongs to all senior managers |
| E | Within the organization – not much can be done about perceptions outside the organisation? |
**Subsystem:** Improve opportunities to determine who has the knowledge and who needs access to it

**Root definition:** Improve existing mechanisms to increase shared awareness of who has knowledge relevant to those working on specific projects, as a means of improving the effectiveness of project outcomes.

<table>
<thead>
<tr>
<th>C</th>
<th>Those staff who need to acquire knowledge appropriate to their projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Knowledge Services staff, from points of contact to group leader, also staff in operating departments who generate knowledge or who know where people are who have it. The customer is external. Client could be in-house. They talk about customer 1, customer 2, which has a specific meaning.</td>
</tr>
<tr>
<td>T</td>
<td>Move from a situation where finding expertise is an ad hoc business, to one where it is more clear who has the knowledge and where it can be found. The word “exploit&quot; Input = uncertainty, ad hoc situation Output = more clarity on who knows what, how to get access to it</td>
</tr>
<tr>
<td>W</td>
<td>The departments can work more effectively if they can make use of existing knowledge, captured as part of documentation of projects or the knowledge/experience of SMEs who have relevant expertise More than one W here – Knowledge Services staff member and operating department member.</td>
</tr>
<tr>
<td>O</td>
<td>CTO? Also managers of operating departments?</td>
</tr>
<tr>
<td>E</td>
<td>Organisation with a “need to know” culture, but also one which has been set up to provide expert advice. Conflict inherent here?</td>
</tr>
</tbody>
</table>
**Subsystem:** Reduce barriers to knowledge sharing arising from “need to know” culture

**Root definition:** Increase the understanding of staff of how barriers in the organization resulting from the “need to know” culture can be mitigated as a means of improving sharing of knowledge.

<table>
<thead>
<tr>
<th>C</th>
<th>Those staff who need to acquire knowledge appropriate to their projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Would need to be high level</td>
</tr>
<tr>
<td>T</td>
<td>This would be a more appreciative transformation, than one where action could necessarily be taken, because of the need for security. Dealing with people’s</td>
</tr>
<tr>
<td></td>
<td>Input = barriers impeding flow/movement of knowledge/ expertise</td>
</tr>
<tr>
<td></td>
<td>Output = appreciation of where barriers could be mitigated</td>
</tr>
<tr>
<td>W</td>
<td>There are two conflicting situations: the need to share to improve efficiency and reduce costs, and the need to maintain security. A culture clash between scientists and services? G worldview – this is a nuisance but livable</td>
</tr>
<tr>
<td>O</td>
<td>Senior mgt, customer?</td>
</tr>
<tr>
<td>E</td>
<td>Within the organization</td>
</tr>
</tbody>
</table>
**Subsystem:** Improve the capture of tacit knowledge

**Root definitions:** Improve the process of converting tacit knowledge to implicit knowledge as a means of increasing understanding amongst staff and the efficiency of work on projects.

<table>
<thead>
<tr>
<th>C</th>
<th>Staff in operating departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Staff in operating departments and in Knowledge Services, subject experts</td>
</tr>
<tr>
<td>T</td>
<td>Move from a situation where much stuff held in experts’ heads etc remains there, and has to be recreated (at some expense) when there is a need for it, to a situation where this is recognised and mechanisms are in place to “capture” it</td>
</tr>
<tr>
<td></td>
<td>I = knowledge that is tacit is accessed only in an ad hoc way</td>
</tr>
<tr>
<td></td>
<td>O = recognition of who has tacit knowledge and how much of it can be made explicit – or implicit. Capture of implicit knowledge.</td>
</tr>
<tr>
<td>W</td>
<td>There is much undocumented resource in the organization, partly in that many staff are subject experts, and partly in that the ability to document project work to include methodology is curtailed by cost.</td>
</tr>
<tr>
<td></td>
<td>There is a value to finding tacit knowledge so that it can be used when appropriate.</td>
</tr>
<tr>
<td></td>
<td>World views: KM&amp;E and the users (in operating departments)</td>
</tr>
<tr>
<td>O</td>
<td>CTO or Board?</td>
</tr>
<tr>
<td>E</td>
<td>Within the organization</td>
</tr>
</tbody>
</table>
**Subsystem: Provide succession planning**

**Root definition:** Arrange for the effective transfer of expertise owned by those leaving the organization to remaining staff and repositories so that useful, relevant knowledge is maintained within the organisation.

<table>
<thead>
<tr>
<th>C</th>
<th>Organization’s staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Subject experts, those about to leave, Knowledge Services, operating department staff</td>
</tr>
<tr>
<td>T</td>
<td>Currently, those leaving aren’t able to pass their knowledge on effectively: mentoring systems and seminars are put in place, but hand-over to junior staff depends on a suitable project being financed at the time, so that working practices can be transmitted. I = staff with knowledge to be shared before they leave O = knowledge shared as much as possible, both with successor staff and with knowledge repositories</td>
</tr>
<tr>
<td>W</td>
<td>Knowledge and expertise possessed by those about to leave is too important to be lost because it encapsulates the history and many of the capabilities of the organization. Those capabilities need to be maintained.</td>
</tr>
<tr>
<td>O</td>
<td>Heads of operating departments, CTO</td>
</tr>
<tr>
<td>E</td>
<td>The organization, which has shrinking budgets</td>
</tr>
</tbody>
</table>
**Subsystem:** Make decision makers / funders aware of the benefits of sharing knowledge effectively

**Root definition:** Increase budget holders’ understanding of the benefits of knowledge sharing relating to cost and maintenance of expertise, so that they make informed decisions when funding projects.

<table>
<thead>
<tr>
<th>C</th>
<th>Decision makers, accountants, budget office</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Operating department managers</td>
</tr>
<tr>
<td>T</td>
<td>Budget holders feel the pressure to keep costs low and don’t act on the need to spend what is necessary to document properly, aren’t aware of the consequences of it, or think they are worth living with. The transformation would be to change their perspective.</td>
</tr>
<tr>
<td></td>
<td>I = budget holders not aware or disregarding the consequences of not spending to share knowledge</td>
</tr>
<tr>
<td></td>
<td>O = budget holders more aware of the consequences, more likely to consider the longer term when deciding on funding.</td>
</tr>
<tr>
<td>W</td>
<td>Currently, there is budgetary and political organisational pressure to keep costs down because of competitive tendering for work. There is also a mentality belonging to the main customer which only wants quick answers. In these conditions, the need to document work properly is discounted on cost grounds, without appreciating that the longer term cost of not documenting would be greater.</td>
</tr>
<tr>
<td>O</td>
<td>Executive board</td>
</tr>
<tr>
<td>E</td>
<td>The organization, but also its customers</td>
</tr>
</tbody>
</table>
**Subsystem:** Improve effectiveness of current knowledge sharing practice

**Root definition:** Act to increase staff understanding and use of mechanisms for knowledge sharing as a means of making processes to share knowledge more effective.

<table>
<thead>
<tr>
<th>C</th>
<th>Operating department staff working on project</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Knowledge Services staff, operating dept staff, including subject experts</td>
</tr>
<tr>
<td>T</td>
<td>Situation which could be improved -&gt; better use of mechanisms, procedures</td>
</tr>
<tr>
<td>W</td>
<td>There are mechanisms in place and a system knowledge structure. Some misconceptions (within normal range?) and inefficiencies which can be tuned. Knowledge Services initiatives – DPOCs, reach-out. Some operating departments prefer their own set up or find KIS inefficient.</td>
</tr>
<tr>
<td>O</td>
<td>CTO, operating department managers</td>
</tr>
<tr>
<td>E</td>
<td>Within the organization, in the situation where Knowledge Services supports operating departments</td>
</tr>
</tbody>
</table>
B  Tested after the root definition plenary session

Not further discussed with the participants before the activity model plenary session.

Subsystem: Distinguish between information & knowledge

Root definition: Put in place a culture where staff appreciate the difference between information and knowledge and exploit both to improve the efficacy, efficiency and effectiveness of work outcomes.

<table>
<thead>
<tr>
<th></th>
<th>Staff belonging to the organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Managers of the operating departments and of the Knowledge Services department</td>
</tr>
<tr>
<td>T</td>
<td>Input = Situation where staff do not differentiate between information and knowledge</td>
</tr>
<tr>
<td></td>
<td>Output = Staff accept a culture where the differentiation is made and the expectation is that both are exploited to improve work outcomes.</td>
</tr>
<tr>
<td>W</td>
<td>Making the distinction between information and knowledge is important so that staff realise that knowledge-as-practice and tacit knowledge are essential to maintaining the organization’s knowledge capability.</td>
</tr>
<tr>
<td>O</td>
<td>Ownership belongs to all senior managers</td>
</tr>
<tr>
<td>E</td>
<td>Knowledge sharing cultures within the organization</td>
</tr>
</tbody>
</table>
**Subsystem:** Improve opportunities to determine who has the knowledge and who needs access to it

**Root definition:** Improve existing “mechanisms” to increase shared awareness of who has knowledge which can be applied on specific “projects” as a means of improving delivered outcomes.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Those staff who need to acquire knowledge appropriate to their projects</td>
</tr>
<tr>
<td>A</td>
<td>Knowledge Services manager, also Operating Department managers, setting the expectation that the mechanisms will be used.</td>
</tr>
</tbody>
</table>
| T | Move from a situation where finding expertise is an ad hoc business, to one where it is more clear who has the knowledge and where it can be found.  
   Input = existing mechanisms are not used effectively to determine who has knowledge useful to a project  
   Output = staff engagement with improved mechanisms to share knowledge useful to projects |
| W | Work on projects can be carried out more effectively if use can be made of existing knowledge, captured as part of documentation of projects or the knowledge/experience of SMEs who have relevant expertise |
| O | CTO |
| E | Organisation with a “need to know” culture, but also one which has been set up to provide expert advice. Conflict inherent here? GP sees this as a nuisance only? |
Subsystem: Reduce barriers to knowledge sharing arising from “need to know” culture

Root definition: Increase the understanding of staff of how to remove barriers in the organization resulting from the “need to know” culture as a means of improving sharing of knowledge.

<table>
<thead>
<tr>
<th>C</th>
<th>Those staff who need to acquire knowledge appropriate to their projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Operating department managers, Knowledge services manager, staff</td>
</tr>
<tr>
<td>T</td>
<td>This would be a more appreciative transformation, than one where action could necessarily be taken, because of the need for security. Dealing with people’sInput = staff perception of barriers to knowledge flowOutput = appreciation of where barriers could be mitigated and willingness to do this</td>
</tr>
<tr>
<td>W</td>
<td>There are two conflicting situations: the need to share to improve efficiency and reduce costs, and the need to maintain security. The staff need to realise where reducing barriers is possible.</td>
</tr>
<tr>
<td>O</td>
<td>Senior management, customer</td>
</tr>
<tr>
<td>E</td>
<td>The organization and the restrictions imposed by the customer</td>
</tr>
</tbody>
</table>
**Subsystem**: Improve the capture of tacit knowledge

**Root definitions**: Recognise the benefits of all forms of tacit knowledge and who has it and formulate ways of expressing it for the benefit of other staff.

<table>
<thead>
<tr>
<th>C</th>
<th>Staff in operating departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Staff in operating departments and Knowledge Services, subject experts</td>
</tr>
</tbody>
</table>
| T  | I = knowledge that is tacit is not recognised, and when it is, can be accessed only in an ad hoc way  
   O = recognition of who has tacit knowledge and how much of it can be made explicit – or implicit. |
| W  | There is a value to finding tacit knowledge, however it is defined, so that it can be used when appropriate. |
| O  | Executive Board |
| E  | The organization |
**Subsystem:** Provide succession planning

**Root definition:** Establish a culture with appropriate governance where expertise owned by staff is passed on to other staff and relevant repositories and is seen as being an important individual responsibility when leaving a specific role.

<table>
<thead>
<tr>
<th>C</th>
<th>All staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Subject experts, those about to leave, Knowledge Services</td>
</tr>
</tbody>
</table>
| T | I = staff with knowledge to be shared before they leave or change roles  
O = situation where those about to leave or change role realise it is their responsibility to share knowledge, both with successor staff and with knowledge repositories, and where they act on this |
| W | Knowledge and expertise possessed by those about to leave is too important to be lost because it encapsulates the history and many of the capabilities of the organization. Those capabilities need to be maintained. |
| O | Heads of operating departments, CTO |
| E | Organization, and its customers |
**Subsystem:** Make decision makers / funders aware of the benefits of sharing knowledge effectively

**Root definition:** Ensure the cost and value of maintaining the organization’s science and technology research expertise, including all published work, is understood by decision makers at every stage of the project life cycle.

<table>
<thead>
<tr>
<th>C</th>
<th>Decision makers, accountants, budget office</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Operating department managers</td>
</tr>
</tbody>
</table>
| T | I = budget holders not aware or disregarding the consequences of not spending to share knowledge  
O = budget holders more aware of the consequences, more likely to consider the longer term when deciding on funding. |
| W | Currently, there is budgetary and political organisational pressure to keep costs down because of competitive tendering for work. There is also a mentality belonging to the main customer which only wants quick answers. In these conditions, the need to document work properly is discounted on cost grounds, without appreciating that the longer term cost of not documenting would be greater. |
| O | Executive Board                             |
| E | Organization and its customers              |
**Subsystem:** Improve effectiveness of current knowledge sharing practice

**Root definition:** Act to increase staff understanding and use of mechanisms for best practice in knowledge sharing.

<table>
<thead>
<tr>
<th>C</th>
<th>Operating department staff working on project</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Knowledge Services staff, operating dept staff, including subject experts</td>
</tr>
<tr>
<td>T</td>
<td>I = appreciation of current knowledge sharing practice</td>
</tr>
<tr>
<td></td>
<td>O = realisation and use of sharing best practice</td>
</tr>
<tr>
<td>W</td>
<td>Best practice in knowledge sharing aids in exploiting knowledge effectively, to improve work outcomes.</td>
</tr>
<tr>
<td>O</td>
<td>Executive Board</td>
</tr>
<tr>
<td>E</td>
<td>Within the organization</td>
</tr>
</tbody>
</table>
Appendix H: Field study activity models

Provide succession planning

[Diagram showing activities related to succession planning, including:
- System of governance
- Expertise identification
- Expertise transfer system
- Take necessary action to establish governance
- Create a culture where governance is appropriate to the situation
- Evaluate if culture has been achieved
- Know what makes an expert in the field
- Identify roles and expertise
- Know what expertise needs to be passed on
- Appreciate responsibility to pass on expertise
- Evaluate effect of using new methods
- Monitor effect of transferred expertise on work or function
- Know expertise associated with role
- Identify roles and expertise in function
- Know what makes an expert in the role]
Improve the capture of tacit knowledge

Tacit knowledge identification system
- Understand the form that tacit knowledge takes
- Understand what tacit knowledge is in the org context
- Determine who has potentially useful tacit knowledge
- Recognise the benefits of tacit knowledge for the org’s work

Tacit knowledge expression system
- Determine aspects of tacit knowledge that can be expressed
- Identify staff who need to acquire the tacit knowledge
- Provide opportunities for the expression of tacit knowledge for the benefit of staff
- Evaluate effect on work outcomes
Distinguish between information and knowledge
Reduce barriers to knowledge sharing

1. Barrier appreciation system
   - Identify characteristics of "need to know" culture
   - Understand how knowledge sharing is carried out currently

2. Identify parts of "need to know" culture which hinder knowledge sharing
   - Share understanding of feasible action to reduce barriers

3. Determine what mitigating actions are culturally feasible
   - Feasible barrier mitigation system

4. Evaluate improvement in project outcomes
Improve opportunities to determine who has knowledge and who needs it
Make decision makers / funders aware of the benefits of sharing knowledge effectively
Improve effectiveness of current knowledge sharing practice

- Increase awareness of knowledge sharing best practice amongst staff
- Use knowledge sharing best practice
- Knowledge sharing best practice identification system
- Review knowledge sharing practice in the organization
- Set benchmark for knowledge sharing best practice
- Provide knowledge of best practice knowledge sharing mechanisms
- Review best practice benchmark

Best practice sharing system
Monitor knowledge sharing practice
### Appendix I: Research protocol template

This appendix summarises the information to be provided for further AIM studies into knowledge sharing. Study directions include:

- Exploring general issues of knowledge sharing in other organizations
- Using the findings of the current research to frame enquiry in other organizations
- Conducting further cycles of enquiry in these organizations, based on findings, unaddressed relevant subsystems, researcher and participant questions

In parallel with further enquiry into knowledge sharing issues, further exploration of methodological dimension of AIM:

- Motivation of participants, relationship between participants and researcher
- Reaching shared appreciation from orthogonal perspectives
- What is involved during authentication of research by participants
- Further exploration of minimum intrusion versus richness of participant contribution
- Exploration of the effect of virtual / electronic means of communication on the method

<table>
<thead>
<tr>
<th>Title of research project</th>
<th>Issues around knowledge sharing in the organization / more specific topic suggested in previous cycles of enquiry.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher and partners</td>
<td>Primary contact: researcher Collaboration with other individuals, institutions, projects in the programme of research Previous work carried out by researcher and partners.</td>
</tr>
<tr>
<td>Synopsis</td>
<td>Summary of study: brief description of enquiry into specific aspect of knowledge sharing.</td>
</tr>
<tr>
<td>Introduction and background</td>
<td>What is already known, what is missing from literature.</td>
</tr>
<tr>
<td>Area of interest</td>
<td>Organizational area in which the enquiry is to be conducted.</td>
</tr>
<tr>
<td>Methodology</td>
<td>Appreciative Inquiry Method.</td>
</tr>
<tr>
<td>Study setting</td>
<td>Description of organization, situation of interest, scale of study.</td>
</tr>
<tr>
<td>Study design</td>
<td>How area of interest is determined (with reference to research programme, previous cycles of enquiry in organization) Permission to conduct study in area of interest Negotiation with gatekeeper, access/invitation to participants, rationale for participant selection Initial discussions with participants and relationship building (where appropriate, e.g. new organization Use of PEARL to consider how the study should be constructed. Mode of interaction / involvement of participants (plenary, one-to-one meetings, electronic, asynchronous).</td>
</tr>
<tr>
<td>Study procedure</td>
<td>Project management, duration, time-lines, relating to Phases of AIM. Problems anticipated, logistical issues.</td>
</tr>
<tr>
<td>Consent and information forms, protocol for withdrawal/replacement of participant(s). Mode of transcription, recording (note taking, rich pictures, AIM-specific documentation (system maps etc)).</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Data management / quality assurance</strong></td>
<td>Study documentation (system maps, root definitions, models), providing audit trail for recoverability, authenticity, transferability Mode of sense-making by researcher, evidence of participant authentication Capturing participants’ learning Reflection on learning Confidentiality and security of collected material.</td>
</tr>
<tr>
<td><strong>Ethical issues</strong></td>
<td>Submission of study to Faculty ethics committee for approval.</td>
</tr>
<tr>
<td><strong>Resource use</strong></td>
<td>Negotiation of time commitment by participants.</td>
</tr>
<tr>
<td><strong>Financial aspects</strong></td>
<td>Expenses for travel by researcher where appropriate.</td>
</tr>
<tr>
<td><strong>Dissemination of results</strong></td>
<td>Research papers.</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>As appropriate to aspect of knowledge sharing being investigated</td>
</tr>
</tbody>
</table>

Appendix J: UPR16 Form

FORM UPR16
Research Ethics Review Checklist

Please complete and return the form to Research Section, Quality Management Division, Academic Registry, University House, with your thesis, prior to examination

<table>
<thead>
<tr>
<th>Postgraduate Research Student UPR16 Information</th>
<th>Student ID: 43605</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate Name: Penelope Jane Hart</td>
<td></td>
</tr>
<tr>
<td>Department: SoC</td>
<td></td>
</tr>
<tr>
<td>First Supervisor: Dr Jim Briggs</td>
<td></td>
</tr>
<tr>
<td>Start Date: (or progression date for Prof Doc students)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study Work and Project</th>
<th>Part-time</th>
<th>□</th>
<th>Full-time</th>
<th>□</th>
<th>MPhil</th>
<th>□</th>
<th>Integrated Doctorate (New Route)</th>
<th>□</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prof Doc (PhD)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethics Issues</th>
<th>Investigating issues influencing knowledge sharing in a research organization, using the Appreciative Inquiry Method.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thesis Word Count: 81,833</td>
<td>(excluding ancillary data)</td>
</tr>
</tbody>
</table>

If you are unsure about any of the following, please contact the local representative on your Faculty Ethics Committee for advice. Please note that it is your responsibility to follow the University’s Ethics Policy and any relevant University, academic or professional guidelines in the conduct of your study. Although the Ethics Committee may have given your study a favourable opinion, the final responsibility for the ethical conduct of this work lies with the researcher(s).

<table>
<thead>
<tr>
<th>UKRCU Minimum Separation Exemplary</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Have all of your research and findings been reported accurately, honestly and within a reasonable time frame?</td>
<td>YES</td>
</tr>
<tr>
<td>b) Have all contributions to knowledge been acknowledged?</td>
<td>YES</td>
</tr>
<tr>
<td>c) Have you complied with all agreements relating to intellectual property, publication and authorship?</td>
<td>YES</td>
</tr>
<tr>
<td>d) Has your research data been retained in a secure and accessible form and will it remain so for the required duration?</td>
<td>YES</td>
</tr>
<tr>
<td>e) Does your research comply with all legal, ethical, and contractual requirements?</td>
<td>YES</td>
</tr>
</tbody>
</table>

*Delete as appropriate

UPR 16 (2013) – November 2013
I have considered the ethical dimensions of the above named research project, and have successfully obtained the necessary ethical approval(s)

<table>
<thead>
<tr>
<th>Ethical review number(s) from Faculty Ethics Committee (or from NRES/SCREC):</th>
<th>January 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signed: (Student)</td>
<td>P. J. Hart</td>
</tr>
<tr>
<td>Date:</td>
<td>27th May 2014</td>
</tr>
</tbody>
</table>

If you have **not** submitted your work for ethical review, and/or you have answered ‘No’ to one or more of questions a) to e), please explain why this is so:

<table>
<thead>
<tr>
<th>Signed: (Student)</th>
<th>Date:</th>
</tr>
</thead>
</table>

UPR 16 (2013) – November 2013