Chapter 5 Method

> Methodology is currently in a state of deep crisis … If this crisis goes unresolved, then radical developments in the field … will encounter the greatest obstacle of all, that is, its practical insignificance, the limited utility of its results. But if a way out of the crisis is to be found, then the methodology … must confront the enormous historical meaning of its tasks. (Vygotsky 1931/1991, p. 241)

5.1 Introduction

Methodology is, strictly speaking, the philosophy underlying the procedures and principles in a particular field of inquiry. It is used in that sense in this thesis, although it is realised that it is increasingly used synonomously with "method". It can be argued that Vygotsky's comment above is just as relevant today as when he wrote it. Psychology was already beginning to model itself on the natural sciences, adopting an experimental approach that ignored the involvement of human beings in a world of meaning that came, in large part, from their culture and their previous engagement with that same world and culture. Vygotsky's concern was that, by adopting a methodology that dispensed with these historical aspects of human engagement in the world, contemporary psychological research was missing much of importance, and would end up with trivial findings.

This chapter begins with a discussion of method and the reasons for selecting the method used in the research project. A description follows of how the data was gathered and analysed. The critique of the literature in clinical decision making and the associated use of language in previous chapters has made it clear that there is still a great deal of misunderstanding over what clinical decision making is. I began this research with the assumption that clinical decision making was a purely psychological phenomenon. However, I now believe that clinical decision making is a complex, multidimensional phenomenon, and that the psychological approaches that have predominantly been used to study it are deeply flawed. There seems to be confusion over the nature of clinical decision making. The overarching question of this research project is therefore, "What is clinical decision making"? This is both a practical and a philosophical question. As Elstein and Schwarz (2000) pointed out, clinical decision making is an extremely

complex phenomenon that needs to be researched from the perspectives of different disciplines to elucidate its characteristics. An approach which is basically philosophical but informed by insights from other disciplines is appropriate. This research project is informed with insights from anthropology and sociology, as well as cultural psychology. However, any research method carries with it its own philosophical assumptions, and these will be discussed.

Appropriate method is crucially important. In an earlier chapter I related the story of my own involvement, as an undergraduate, in an experiment on clinical decision making, together with a critique of the failings of that research effort. This might be seen by some as a case in which the method needed adjusting slightly so that better results could be obtained. However, my opinion is that the method chosen was incapable of shedding much light on the nature of clinical decision making, and slight adjustments would have been a waste of time and effort. Harré's (1978) insight was that methodological flaws in research projects are rarely superficial flaws but are frequently attributable to deep confusion over the subject matter. This is echoed in Wittgenstein's work when he wrote of psychology:

> For in psychology there is experimental method and conceptual confusion. … The existence of the experimental method makes us think that we have the means of solving the problems which trouble us; though problem and method pass one another by. (Wittgenstein, 1958 #xiv)

This sentiment is reinforced by Vygotsky who wrote:

> Blind transportation of the experiment, the mathematical method from the natural sciences, created in psychology the outward appearances of science, under which, in reality was hidden a complete powerlessness before the phenomena under study. (Vygotsky, cited in Van der Veer & Valsiner, 1991, p. 149)

It seems that both Vygotsky and Wittgenstein were aware of the extent to which the experimental approach in psychology could mislead people into believing that they were discovering the characteristics of cognitive phenomena, when in reality the experiments were simply confirming the assumptions of the researchers.

For example, in the experiment in which I participated (see section 2.2) there was an underlying assumption that clinical decision making is largely a matter of memorising lists, in the way people might memorise lists of telephone numbers. Experimental subjects who could do this well would be judged as being good at clinical decision making on the basis of being able to accurately recall the lists we were given to memorise. In turn, this experiment could be used to provide "proof" that clinical decision making is a matter of accurately recalling lists in this manner. The experiment forced participants to use the very phenomenon it was supposed to measure, and the assumption was then made that this was how things occurred in natural settings. This circular logic illustrates that being clear about the research framework within which we work and the philosophical assumptions underlying the framework are important. Gadamer (1989) critiqued the belief that scientific method on its own can produce something called "the truth". Gadamer argued that prior to any method there must be a pre-understanding of truth that gives any method its intelligibility and makes interpretation possible. This pre-understanding of truth produces methods rather than methods producing truth.

5.2 Methodology

Crotty (1998) distinguished between different frameworks of research on the basis of their grounding in epistemology. Epistemology provides the foundation for research and on this is built the theoretical perspective of the research project. Then the methodology is selected and finally the method itself. Each provides the basis for the next.

According to Crotty, epistemology is the theory of knowledge underlying the research, examples being objectivism, constructionism or subjectivism. The theoretical perspective is the particular philosophical position which provides a context for the research, such as positivism, feminism, and the branches of interpretivism such as phenomenology and hermeneutics. Methodology refers to the overall strategy or plan of action for conducting research, for example ethnography, survey research or phenomenological research. Finally, there is the actual method used, such as questionnaires, interviews, or participant observation. Crotty considered that the epistemology and theoretical perspective are equivalent to Gadamer's pre-understanding. The strength of Crotty's scheme is that it provides a format for a researcher to conceptualise and clarify the foundation for a research project. Using the scheme as a guide, researchers can consciously and

deliberately consider how the ideas underlying their project fit together within the different layers, and ensure consistency between them. This will help provide a research project with intellectual rigour.

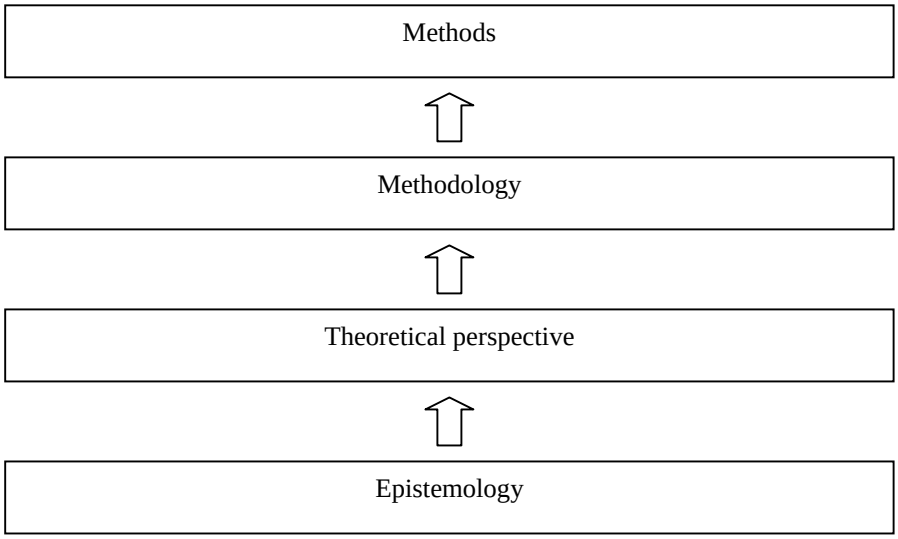

Figure 5.1 Crotty's (1998) research framework based on epistemology

Higgs (2001) took a similar but slightly different approach, that of the paradigm, distinguishing between three core research paradigms, the emipirico-analytical, the interpretive, and the critical paradigm. A paradigm is composed of a set of beliefs, conventions, and assumptions that define what can be asked as meaningful questions, how these questions can be answered, and what can constitute an adequate answer to any question. In other words, a paradigm determines what counts as knowledge and how knowledge can be validly generated. The paradigm approach is similar to Crotty's in that different aspects of the research build upon each other. In Higgs's scheme it is the paradigm and its corresponding philosophical stance that are equivalent to Gadamer's pre-understanding.

Research paradigm	Philosophical stance	Research goals	Research approaches	Methods
Empirico-analytical paradigm	Positivism/objectivism (Knowledge and meaning exist objectively in the world independent of human concerns, and wait to be discovered.)	Measure, test hypotheses, predict and control, explain, generalise, identify cause and effect.	Scientific approach, operationalism, observation	Experiment, survey, sample, Randomised controlled trial (RCT)
Interpretive paradigm	Idealism (Knowledge and meaning are constructed by people.)	Understand, interpret, seek meaning, illuminate	Phenomeno-logy, hermeneutics, narrative inquiry	Interview, participant and non-participant observation, case study, textual review
Critical paradigm	Historical realism (social practice and culture shape practice)	Improve, empower, liberate, raise consciousness	Action research, collaborative research, critical hermeneutics	Interview, focus groups

Table 5.1 Research Paradigms (derived from Higgs, 2001)

Crotty's epistemology and theoretical perspective are broadly equivalent to Higgs's paradigm and philosophical stance. First, there is the research paradigm, as noted above. The experimental psychology of which I have been so critical is firmly based within the empirico-analytical paradigm. This paradigm includes the philosophies of positivism and empiricism, and has dominated the natural sciences for centuries. In Crotty's scheme, experimental psychology can be described as being with an objectivist epistemology and utilising positivism as a theoretical perspective. Objectivism "holds that meaning, and therefore meaningful reality, exists as such apart from the operation of any consciousness" (Crotty, 1998, p. 8).

Within the natural sciences the empirico-analytical paradigm is, and has been, very successful. The hypothetico-deductive approach belongs in the empirico-analytical paradigm. The empirico-analytical paradigm has also dominated the world of health care and research in the human sciences, but has come under attack in recent decades as more and more scholars realise that it is inadequate for researching human meaning and lived experiences. In the empirico-analytical paradigm meaning is generally viewed as an intrinsic attribute of things, and the goal of research is to discover the meaning inherent within an object, even if the object is a person. When dealing with research objects such as atoms and molecules this is not seen as a problem, but when the objects of research are human beings acting in the world, constantly attempting to make sense of their world, then the empirico-analytical paradigm begins to exhibit major flaws. Human beings, both jointly and individually, attribute meaning to themselves and the world around them, and can change those meanings according to circumstances, in complex ways that make nonsense of the empirico-analytical paradigm that assumes meaning can be fixed for all times and places. Therefore the empirico-analytical paradigm has severe limitations when it is applied to human beings and the interpretations they make. Crotty's "methodology" is equivalent to "research goals" and "research approaches" in the Higgs scheme. The purpose of considering these constructs is so that the choice of methods, and the form those methods will take, can be seen to have a coherent basis that is consistent with the underlying epistemology or paradigm. Again this can help to ensure rigour in the research. This research project lies within the interpretive paradigm.

5.3 The Interpretive Paradigm

The interpretive paradigm reflects recognition that meaning is a human construction. According to the interpretive paradigm, the meaning people attribute to things in the world around them is not only constructed but contingent. This means that the meaning constructed depends heavily on contextual features, that is, on the particular history, place, and culture that people bring to any act of meaning-making. Perfectly valid meanings can therefore vary from person to person and change within one person according to circumstances. The quotation at the start of this chapter from Vygotsky reflects this insight. Both participants and researchers bring their personal narratives and histories to the research encounter, and these are in turn embedded within the larger history of the professions and the cultures of which these people are members. Therefore,

a research method employed to discover the understandings people have of a phenomenon like clinical decision making must permit these various influences to show through, and must take account of them. Rather than seek universal truths, researchers using an interpretive approach seek to come to a deeper understanding of the particular. For example, Engeström, using a qualitative approach based on Vygotskian ideas, wrote of his research in a medical setting: “I draw on my data in order to illuminate and concretize theoretical ideas and arguments, not to present empirical proof” (Engeström, 1995, p. 396).

Interpretivism is based on a more humanistic philosophy than positivism and provides a basis for a wide variety of qualitative research, such as grounded theory, ethnography, phenomenology, phenomenography and hermeneutics. The assumptions of the interpretive paradigm are radically different from those of the empirico-analytical paradigm. For example, Dahlberg et al. (2001) listed some key interpretivist assumptions that included:

- Multiple constructed interpretations of reality. We may all live in one universe, but our experiences and interpretations of that universe can be very different. Vygotsky (1978, 1986) argued that our culture provides us with an interpretive repertoire, rooted in language, that shapes the ways in which we make our interpretations.
- The investigator and research participant are both changed by the research process. There is no question of conducting research in a totally detached manner. It can be argued that this also occurs in much positivist research, even where attempts are made to minimise the effects of researchers on the research subjects, such as the double-blinding that occurs in many drug trials. Although there can be some minimisation of the effects the researcher brings to a project the participants and researchers must be affected in some way.
- Description and understanding can be more useful and interesting than attempts to establish cause and effect relationships.
- Inquiry is always value-bound. This reflects Kuhn’s (1996) notion of paradigms. There can be no neutral interpretations. All findings are profoundly affected by the values, theories and prejudgments that researchers bring to the research process.

This research project has the goal of achieving a better description and understanding of the phenomenon of clinical reasoning as conducted or learned in settings of group decision making, by exploring the interpretations that health care professionals have of experiencing clinical reasoning in groups. Therefore, this project is firmly placed within the interpretive paradigm. The epistemology being followed can be described within Crotty's scheme as social constructivist or social constructionist.

Constructivism refers to the belief that people effectively construct the meaning of the reality around them. Of course, this does not mean that they assume a god-like status and create their own reality. We all live in one universe, but as soon as humans try to understand and label that universe they effectively live within the world of labels and understandings that they construct. Scholars as far back as Piaget (1999) accepted the constructivist nature of the world in which humans live. Social constructivists contend that the cultures and societies we live in provide us with the cognitive tools to construct our meanings. They become meanings for individuals but have a social origin and are then internalised. This is the position of scholars such as Vygotksy (1978) and Bruner (1987, 1992).

Social constructionism is a variation on social constructivism that emphasises the importance of language/discourse in the constructions we make. Gergen (1999) and Shotter (1993) take this position and Bakhtin (1986) could also be included within it. A methodology used by those who explicitly seek to understand phenomena through exploring people's experiences of those phenomena is hermeneutic phenomenology, and that has been selected for this project. Hermeneutic phenomenology is now briefly introduced and explained.

5.4 Phenomenology

Phenomenology is generally considered to have started with the work of Edmund Husserl (1973) at the start of the twentieth century, although Moran (2000) demonstrated that Husserl's work was, in fact, based on the earlier descriptive psychology of Franz Brentano (1995). Husserl sought to bring philosophy back from abstract metaphysical speculation and into contact with the concrete world by exploring the way the concrete

world is experienced. The core of phenomenology is to use the human lived experience of phenomena in order to better understand those phenomena, whether they are in the world around us and/or within us. According to Husserl, phenomenology is an attempt to establish the structure and meaning of experience, which in turn can lead to a clearer understanding of the phenomena in question. There is consequently a vast range of phenomena that phenomenology can examine. Health care and clinical reasoning are within the scope of phenomenological investigation. For phenomenologists, experience is not mere sense data, but is the complex of relations between a person and the world, between a person and other people, and this experience is assumed to have an intrinsic structure of meaning. There are strong connotations here of Bakhtin's (1986) notions of the fundamental dialogicality and intersubjectivity of human nature, and the assumption that these lie within the relationships that humans have with each other and the world around them.

5.5 Phenomenology and Husserl

According to Husserl, phenomenology means adopting a certain attitude, a particular mode of attention, towards the world and the way we conceptualise the meaning of experience. He called this the *phenomenological reduction*, and argued that there is a need to constantly go "back to the things themselves" and the way they are presented to us. An important way of checking the validity of a phenomenological analysis is to compare the analysis against the original data, "the things themselves" (Husserl, 2001).

According to Husserl, our experience is consciousness of an object. This he called *intentionality*. In this sense, intentionality means being "intent upon" or "paying attention to" something, as opposed to desiring it or wishing to see it happen. Husserl contrasted the phenomenological attitude to the natural attitude. In the natural attitude, we focus our attention on the object of our activity. The actions are themselves normally transparent to us. The phenomenologist focuses attention on the activity and the ways in which the objective gives meaning to the activity. Husserl referred to this change in focus as the *epoche*. The objective is placed into the background, so to speak. The claim of phenomenology is that we can study the meaning structure of all our activity and of everything we experience, whether real or imagined. Svenaeus (2000) gave the examples of lions and books. We have different expectations of them because of our lifeworld

experience, even if we have never seen a real lion. At the same time, some of the expectations we have of lions and books are the same. They have sides we cannot see and they exist in time and space. These expectations make up part of the meaning structure these things have for us. To focus on the experience in the phenomenological attitude we also need to bracket, or put to one side, our preconceptions and assumptions. This, too, is part of the phenomenological reduction.

In these ways Husserlian phenomenology explores and deepens our conceptual understanding of phenomena. According to Husserl, phenomenological reduction can also include free fantasy variation. We can consider not only the concrete instances of the phenomenon we wish to study but also imaginary instances. However, imagined instances must be founded on reality and they can also be used to provide typical examples of the phenomenon.

For people with a background in the natural sciences this may sound like a highly suspect activity. However, the natural sciences also engage in this activity. Einstein's theories about relativity were the result of thought experiments, not empirical observation. For example, Einstein asked himself what would happen if he could travel at the same speed as a beam of light. However, Einstein's thought experiments were thoroughly grounded in what was known at the time. In the health care professions a great deal of knowledge (and teaching) is based on the presentations of disease in a typical patient. However, most health care professionals would acknowledge that they have rarely, if ever, seen a typical patient. In this sense, the typical patient, with a typical presentation, is an imaginary device used for conceptualising models of health care. The imaginary cases, exemplars, that are often a part of many phenomenological descriptions are similar in purpose, as they serve to highlight distinctive aspects of the phenomena experienced.

There are problems with Husserl's version of phenomenology. According to Svenaeus (2000) it lacks a vocabulary to cope with feelings and the structure of the self. Husserl's focus is on consciousness and there seems to be no place for embodiment and embodied experience. Husserl's phenomenology is suitable for studying phenomena that we live "towards", but is less practical for studying the phenomena we live "through". Svenaeus used health as an example of a phenomenon we live through. Our health is not something we normally pay attention to. It is something we live through while focusing our attention

on other goals. Clinical decision making is similar. Health care professionals normally focus on their goals of managing patients, and clinical decision making is something they use and live through to achieve these goals. Like health, clinical decision making is something that attracts our attention only when something goes wrong with it or when we are trying to learn it. To study clinical decision making we need a form of phenomenology that focuses on "the meaning of human experience situated in the world as acting, attuned and embodied" (Svenaeus, 2000, p. 82).

As a branch of practical philosophy, phenomenology has flowered in many different directions throughout its history from Husserl's original formulation, and has been associated with many famous names in twentieth century philosophy, such as Jean-Paul Sartre, Martin Heidegger, Hans-Georg Gadamer, Paul Ricoeur and Alfred Schutz, to mention just a few. Phenomenology continues to develop and there are now several branches, but this is not the place to discuss them all. The particular branch of phenomenology deemed suitable for use in this research is hermeneutic phenomenology, especially as espoused in the works of Martin Heidegger and Hans-Georg Gadamer. Heideggerian and Gadamerian hermeneutic phenomenology are now briefly explained.

5.6 Hermeneutic Phenomenology and Heidegger

Heidegger (1996) extended phenomenology by taking as his starting point human "being in the world" (*dasein*). This approach contrasts markedly with Husserl's. Husserl's phenomenology is essentially epistemological, with a focus on scientific knowledge. Heidegger's phenomenology is much more ontological and hermeneutic. Heidegger was interested in the self-understanding activities of our existence in the lifeworld, and talked of his approach as a hermeneutics of "everydayness". In other words, Heidegger was concerned with the people's self-interpretations of their ordinary being in the world. Heidegger adopted the view that understanding and interpretation are "foundational modes of man's being" (Palmer, 1969, p. 42). In other words, to be human means to be constantly interpreting the world around us, and to live within a world made up of interpretations. Heidegger differentiated between *ontic* disciplines and ontology. Biology is an *ontic* discipline, as it investigates life and living things as objects in the world. Heidegger's hermeneutic ontology is more concerned with the way life and living things are given meaning. Ontologically, the body becomes a lived, experienced body, as

opposed to a mere object, which is how the health care sciences tend to conceptualise the body. This is why Svenaeus (2000) chose hermeneutic phenomenology to research health, as it provides the intellectual tools and vocabulary to enable rich descriptions to emerge of phenomena such as health, as they are experienced and interpreted by people. This is also why hermeneutic phenomenology has been chosen in this project to research clinical reasoning. Clinical reasoning is experienced and interpreted by those who perform it, and hermeneutic phenomenology provides the conceptual tools to engage with these experiences and interpretations.

A few of the key aspects of Heidegger's work that are relevant to this study should be highlighted. One aspect is the notion of "thrown-ness". This means that humans are, in a sense, "thrown" into particular circumstances in the world. We grow up and participate in particular cultures at particular times and places, with particular histories, over which we have no essential control, and we have to make sense of the world and our place within it from within these particular circumstances. This concept connects with Vygotsky's notions of a social world that provides the environment from within which we develop. We can act upon and change the world around us, but the particular lifeworld into which we are "thrown" also acts upon and changes us.

Another important aspect of Heidegger's approach is the notion of tools. According to Heidegger, we live in a world of tools. There are strong connotations here of Vygotsky's use of the concept of tools and artefacts. For Vygotsky, too, human beings live in a world of tools and symbol systems, both concrete and abstract. Almost everything around us, the natural world as well as artefacts made by humans, is experienced as some form of tool. Trees, for example, are tools in so far as they can provide timber, shade or a place of recreation. Heidegger wrote of a totality of relevance which is the relevance that the world, as a collection of tools, has for us. The world around us is available to us, in one way or another, and achieves its meaning through its usefulness to us. The relations between tools are seen in terms of "in order to" (Heidegger, 1996/1927). Heidegger used the example of building a house. People use a hammer in order to nail wood, etc. The final meaning of every tool is in its importance to humans in their lifeworld. Heidegger's analysis focused on practical relations between tools in the world. This world of tools is so pervasive that most of the time the tools, as such, are overlooked by people. Heidegger used the example of a hammer. Most of the time we use the hammer in an assumed, taken

for granted, manner, which Heidegger referred to as being “ready to hand”. We tend not to think of such a tool and its purpose in any abstract or theoretical way. It is only when the hammer fails that we are forced to contemplate the hammer in itself and theorise about it in an abstract manner that Heidegger called the “present at hand”, or theoretical knowing. The abstract and theoretical ways of knowing are dependent on, and presuppose, the existence of things in the “ready to hand” manner of the lifeworld (Leonard, 1994). Heidegger pointed out that the lifeworld and the tools within it, which are so often seen but unnoticed by us, are given to us through our language, culture, and history. This insight has important implications. The lifeworld circumscribes our choices and dictates the possibilities that are open to us. If we have freedom then it is a situated freedom. This perspective is in contrast to Cartesian notions of freedom and autonomy.

Taylor (1985) argued that a major attraction of traditional Cartesian science is that it has a seductive view of the researcher as radically free and detached from the world, observing without being involved. Taylor argued that this seventeenth century view of science is still prevalent, and it ignores the deep involvement of humans in their lifeworld, and therefore prevents us from truly understanding human agency and the situated nature of humanity. For experienced health care practitioners, clinical decision making is a tool that is normally a part of the “ready to hand” lifeworld. However, for those who are still learning, or who are required to articulate and justify clinical decision making to others, clinical decision making can be seen as a tool that demands attention be paid to it, as it is in itself. Clinical decision making forces its way into the conscious experience of those participating in these situations, who must therefore make some sense of it. This is why Heidegger’s version of phenomenology lends itself to a research project of this kind. It provides a vocabulary and conceptual framework to study clinical decision making in these settings. According to Heidegger, the way in which people make sense of the lifeworld and its meaning structure is through language. Through language we can think and talk about the world and make its meaningfulness apparent to ourselves and others. This brings us to Hans-Georg Gadamer, a student of Heidegger, who extended Heidegger’s hermenuetic phenomenology in ways that are also relevant to this study.

5.7 Philosophical Hermeneutics and Gadamer

Gadamer developed Heidegger's hermeneutic phenomenology, and Gadamer's philosophy is often referred to as philosophical hermeneutics (Gadamer, 1976). Hermeneutics is the art or theory of interpretation. It began as the art of interpreting sacred texts but during the twentieth century was developed into a broader philosophical position (Palmer, 1969). There are now two predominant ways of looking at hermeneutics. One is as a method for providing rules and procedures to interpret what a text means, especially when the text comes from a different time or culture. The other position, developed by Heidegger and Gadamer, casts hermeneutics as central to human experience and what it means to be human. Bohman (1999) gives interpretation of the law as an example of the second position on hermeneutics. Interpretation of the law inevitably transforms it and those involved in its interpretation. This is also the Vygotskian view, that the psychological tools that humans use in their dealings with the world also work reflexively and shape the humans using them.

In Gadamer's magnum opus "Truth and Method" (1989), he set out to accomplish a number of things. He traced the development of hermeneutics from its origins in the work of Schleiermacher and Dilthey through to Heidegger. Gadamer also related hermeneutics to the philosophy of historical understanding, and continued into what has been described as a linguistic phase, in which Gadamer asserted the linguistic character of human reality itself (Palmer, 1969). According to Gadamer, hermeneutics was at the centre of modern philosophical problems, such as the "relationship of language to being, understanding, history, existence, and reality" (Palmer, 1969, p. 43).

Gadamer's philosophy is also very much a hermeneutics of dialogue. People enter into a dialogue with the text, or text analogue, which they wish to understand. Each person has a "horizon of understanding" which comes from their experience of the world and the culture in which they live. Gadamer spoke of *tradition* to denote this, and said that *tradition* gives people a set of prejudgments (or prejudices) which they bring to any event of understanding. It is the prejudgments that inform the questions we ask and what we can accept as possible answers. Husserl claimed that in undertaking a phenomenological study it is important to "bracket" or set aside such prejudgments. Gadamer was of the opinion that this was not possible, but that it was important to try to identify the

prejudgments that we bring to any act of understanding so that they can be taken into account. An act of understanding can be a complex dialogue, as one may have to move between the parts of the phenomenon in order to understand the whole, and study the whole in order to understand the parts until there is the dialogical fusion of horizons. If we are sufficiently open to the meaning that a text has for us it can be consciously integrated with our prejudgments, presumably transforming them in the process. Our horizon of understanding is thus fused with the horizon of what we seek to understand.

Gadamer's work is reminiscent of Bakhtin's (1986) work on dialogicality, and of Wittgenstein's (1958) work on language games. Gadamer was certainly aware of Wittgenstein's work, referring to him extensively in "Truth and Method". It can be argued that Wittgensteins's *forms of life* and their corresponding *language games* have much in common with Gadamer's *tradition. Tradition* also shares much with Vygotsky's notions of culture and the cultural heritage that grounds all our understanding. Ratner (1997) was of the opinion that phenomenology and hermeneutics were ideally suited for undertaking an empirical study using Vygotsky's ideas. He also believed that Vygotsky's ideas of the fundamentally social character of human nature could inform hermeneutics and phenomenology, which he criticised as commonly adopting a much too individualistic attitude to human nature and engagement in the world. For example, Ratner (1993) gave an extensive critique of some of Giorgi's (1989) psychological phenomenology, which he claimed completely ignored the social nature of the phenomenon that Giorgi was studying. Gergen (1999), too, criticised phenomenology and hermeneutics for being too individualist and taking insufficient account of the extent to which interpretations are socially based. It is my belief in this project that hermeneutic phenomenology is appropriate for research of this kind, but that it needs to be informed by insights into the degree to which social interaction shapes meaning making.

In this project it is assumed that clinical reasoning is a social, dialogical, linguistic, and interpretive activity, whether the practitioner is alone or is part of a group, and that the practitioner is affected by the activity. Therefore, hermeneutic phenomenology has been selected as an appropriate means of studying clinical reasoning. Hermeneutic phenomenology, informed by Vygotskian ideas, provides the rich conceptual framework required for such a study.

5.8 Ethics

The project was conducted with conscious attention to a number of ethical principles. The first was lack of coercion. I had been working with medical students as a PBL tutor for some years before the project began. At first, I contemplated inviting a group that I was tutoring to participate in the research. However, students might have felt under some pressure to comply, as tutors have some (limited) authority over the students. Therefore, I decided to approach a group that had no current or previous connection with me in a teaching role. It was emphasised to the group that they did not have to participate, and that should any one member be unhappy about giving consent then another group would be approached. This extended to all participation. Group meetings were recorded, as were interviews with individuals. In the clinic it was also emphasised to all health professionals that if any one person in the clinical meetings was unhappy with participation then another team that met on a different day would be approached.

Informed consent was another important principle. I explained the research project to all participants in person. Participants were also supplied with an information sheet (see Appendix A) explaining the purpose of the project and their role within it, and invited to ask me about any aspect of the research. Participants were also required to sign a consent form (see Appendix B) which laid out in detail what they were agreeing to. In consultation with the Human Ethics Research Committee of the Northern Sydney Health Authority, participants were required to sign this twice, once before participation and once again afterwards to confirm their consent.

Confidentiality was another important principle. All recordings were kept in a secure cabinet and only I and my supervisor were permitted to listen to any of them. Tapes will be destroyed within five years of recording. The typist who transcribed the tapes was familiar with this task from similar projects and understood the requirement for confidentiality, and agreed not to disclose any information to anybody else. At transcription all identifying details were removed, participants were made anonymous and given pseudonyms. This meant that participants should feel free to express any opinion without fear of being later identified in any way that might be to their disadvantage.

5.9 The Participants – Medical Student Group

The Associate Dean of the local medical school was approached and gave permission for me to invite a group of students to participate. The medical school had organised the groups so that they had a mixture of genders and backgrounds. The medical course was graduate entry only and students had a wide variety of backgrounds. It was decided to approach a group in the third year of the course. By this stage they had plenty of experience of PBL and should be expected to have developed some insights into its nature and how it applied to the assessment of real patients. At the same time they were still learning and their clinical reasoning skills were still being developed. A group of third year students was then chosen at random by the Associate Dean. I was introduced to the group and given the opportunity to explain the research and invite them to participate. It was explained that if any single member of the group was not happy with participating then another group would be approached. All members of the first group I approached agreed to participate. Information sheets about the research were given out and consent forms completed. There were ten students in the group and they agreed to allow me to sit with them as a non-participant observer in their PBL tutorials for ten PBL tutorials, which was the number remaining that academic year. They all agreed to be interviewed by me on a one-to-one basis at a time and place that was mutually convenient. The agreement was for one interview. Their backgrounds varied: some had done previous degrees in basic medical sciences; others were health professionals already. Among the group there was one nurse, one physiotherapist, a speech pathologist, a biomedical engineer, a research scientist (chemistry) and a science teacher. Two were international students.

Each tutorial was three hours long. Each week the group would spend the first half of the tutorial completing the case they had started the previous week; they tended to concentrate on management issues. The second half of the tutorial time would be devoted to beginning a new case and would normally proceed as far as establishing a diagnosis. The tutorials were deliberately staged in this way in order to encourage self-directed learning. Group members were expected to use each new case to identify gaps in their knowledge, officially called “learning topics”, and to use the time in the intervening week to seek answers for the learning topics so that they could present their findings to each other the following week. At the next tutorial they would go on to discuss management of the “patient” represented in the original problem, and complete the case. At the time of

data gathering, the medical school was trying out some new variations on the PBL format. A tutor was present for the first half of each tutorial (this was the management part of the previous week's case). The students themselves ran the second half of the tutorial (the diagnostic part of a new case). The students took it in turns to assume the role of tutor, and each student tutor (and only the student tutor) would be in possesion of the case notes that provided the necessary information for running the case. Immediately following the tutorial there was a lecture conducted by a specialist in the field of the case study completed that morning. This provided an opportunity to "wrap up" the case and allow any outstanding issues about the case to be resolved. Not all students were present each week, as there were always two scheduled to be away on rural attachments. Therefore there were normally 8 students present at each PBL tutorial.

5.10 Data Collection – Medical Students

As a non-participant observer I sat to one side of the group. At first they were a little self-conscious but soon learned to ignore me and to get on with the business of working through their cases. As a gesture of goodwill I always took a large packet of chocolate biscuits which seemed to be appreciated and may have helped build tolerance to the presence of a stranger. The students were friendly and cooperative, without exception, and rapidly accepted my presence. All sessions were audiotaped with the permission of all present, and at first some were videotaped. The videotaping was soon abandoned. The videotapes seemed to add little additional information to the audiotapes and the camera was a little intrusive. I made field notes as the tutorials progressed. I also had access to all the case study documentation that was provided to the tutors whose duty it was to run the groups and to ensure that the students worked their way through the cases in a timely fashion and at an appropriate level of detail. As a non-participant I was free to observe and make notes, concentrating on the research and not achieving the learning goals. I also attended the lectures which immediately followed the PBL tutorials.

After five weeks of observation I commenced the individual interviews which were conducted over several weeks. Two locations were used, selected with the interviewee on the basis of convenience, quietness, absence of distraction and the low likelihood of being disturbed. One was the same tutorial room that the group used for their PBL meetings. The other was the pathology museum which was in the same building. Being surrounded

by pots of diseased organs did not seem to distract the students as they were familiar with their contents. Each participant was interviewed once. It was felt that each interview revealed sufficient depth and breadth of insight, and that further interviews would have revealed little more. In addition, it was also realised that all participants were extremely busy and had needed to make time available for an interview. More than one interview may have unduly stretched the goodwill of the participants.

Interviews were all recorded using analogue audiotapes with an omnidirectional microphone (Sony Noise Reduction Microphone ECM-R100 together with Sony Recording Walkman GX400). Interviews could have been recorded digitally and in some ways this would have been preferable. For example, copies can be made more easily, digital recorders are absolutely silent as they have no moving parts, and there is no tape reversal to interrupt or distract the interviewer and interviewee. However, the logistics of transcription mean that a typist can work much faster with a footplate to control the position of an audiotape. At the time there was no technology that allowed a typist to do the same with a digital recording, hence the decision to work with “old” technology.

The interviews followed a semi-structured format based on the recommendations of Minichiello et al. (1995) and Weiss (1994). I devised an interview guide to help me as an aide-memoire to ensure coverage of the key areas of interest. This guide evolved over the weeks that the interviews took place. The final guide is included in Appendix C. Before each interview I read through the interview guide several times to remind myself of what I wanted to cover. Questions fell into six groups. There were questions about previous background, early PBL experiences, current experience, running PBL sessions as the group leader, relating PBL to practice, and general questions.

Each interview began with questions about the participant’s background before coming to study medicine. The purpose of this was twofold. The first purpose was to act as an ice-breaker and help the participant relax and get the interview underway. The second purpose was to give me insights into the personal history of participants and gain some understanding of the prejudgments that they brought to their interpretations about clinical reasoning, both in the PBL tutorials and with real patients on the wards and in the clinics.

The students were all in their third year of the course and were familiar with the PBL format. The next group of questions dealt with their early experience of PBL in the medical school and what they had learned about clinical reasoning from this. The third group of questions then sought to determine what they were learning from their current experience of PBL, and how this related to their earlier experience. The fourth group of questions encouraged participants to reflect on how the PBL experience now fitted into work in the clinics with real patients. The last group of questions were more general, for example asking students about their perceptions of the strengths and weaknesses of PBL and for any explicit insights they had into clinical reasoning and medical education in general.

I did not adhere rigidly to the interview guide. If participants started providing information that seemed relevant to my research goals I generally allowed them to continue. They were encouraged to provide concrete examples as often as possible, so that they were reflecting on their own experience rather than giving abstract answers. After each interview I listened to the audiotape within 24 hours, reflected upon what was being said, recorded field notes and made slight modifications to the interview guide if it seemed appropriate. Audiotapes were duplicated and copies then transcribed.

5.11 The Participants – Multidisciplinary Clinic Group

The head of department of a multidisciplinary pain clinic was approached and the research explained to him. He gave permission for us to invite the health professionals in the clinic to participate in the research project. The professionals were approached individually and the project explained to them and an invitation to participate issued. I was also invited to give a short presentation at the department's weekly research meeting. The opportunity was taken to explain what the research project was seeking to achieve and to brief participants as a group as to what was involved. This occasion also provided an opportunity to explain some of the theoretical basis underlying the research, which many said privately was interesting and helpful to them. This briefing came just before the clinic interviews began, and enabled participants to reflect on some of the interview questions beforehand. All the health professionals that I approached agreed to participate. Information sheets similar to those given to the students were provided and consent forms signed prior to data gathering (see Appendix C).

5.12 Data Collection – Multidisciplinary Clinic Group

I sat in on numerous clinical meetings. These were invariably held at lunch times. The reason was purely logistical. New patients to the clinic had a full morning of assessments. They would be seen independently by a pain doctor, a physiotherapist and a psychiatrist or clinical psychologist. Patients with orofacial pain were seen by a dentist rather than a doctor. Each health professional would assess each patient for about an hour and prepare a report to present to the lunchtime meeting. Each health professional would therefore normally see three patients in a morning. There could be two teams working and assessing a total of six patients. The health professionals would then present their reports at the meeting, when each case would be discussed and management options decided. The atmosphere at such meetings was generally informal and it was accepted practice that most people would bring a sandwich lunch which would be consumed during the meeting. One or two nurses would normally be present at the meetings, and although they had not assessed any patients they had the responsibility of organising many of the treatments that were recommended and would occasionally contribute to the discussions. Visitors were common at such meetings and my presence as an observer, with the agreement of all clinic participants at the meeting, was not unusual. These meetings were audiotaped with permission. After the meetings it would be the doctor/dentist who would then go to see the patient and discuss the team's findings and recommendations.

I invited 12 of the health professionals of the clinic to participate in interviews and all accepted. These were all regular participants in the collective decision making of the meetings. Participants were from the complete mix of professions represented in the clinic. Planning some of the interviews was difficult, and with some participants I had to formally book an appointment as this was the only way to ensure they would be available as planned. Even then at least one of the doctors had to answer pagers and make urgent phone calls during an interview. The interviews took place in a consulting room in the clinic or else in an office which was close by. The format was similar to that used in the student participants' interviews. I used an interview guide with questions in groups about participants' backgrounds before coming to the clinic, their early experiences, their current experience, and more miscellaneous questions such as how they might organise their own multidisciplinary clinic. Questions tried to draw out their experience of clinical

reasoning in the clinic's work in general. Again, like the student participants, they were encouraged to provide concrete examples wherever possible. Interviews were audiotaped.

5.13 Analysis

All interview audiotapes were professionally transcibed by a typist who was familiar with such interviews and who undertook to maintain confidentiality. The text for the analysis constituted the interview transcripts together with meeting observation field notes and relevant documentation such as the PBL notes for tutors. Transcripts were 20 to 30 pages long on average.

In the tradition of hermeneutic phenomenology, data analysis is an iterative process that is directed towards finding meanings. Analysis followed typical practice for hermeneutic phenomenology, as described by Giorgi (1989, 1997, 1985) and adapted by Ratner (1997) and Dalhberg et al. (2001). Firstly, there was "immersion in the data". This involved close reading of all transcripts and field notes several times, seeking to attain a deep familiarity with the text messages, and gain a sense of the whole. Secondly, themes or meaning units relevant to the research questions were identified. Thirdly, these themes were brought together and used to develop a rich description of the phenomenon. Dahlberg et al. (2001) distinguished between phenomenological descriptions and hermeneutic interpretations, although they emphasised that the two had much in common as hermeneutic interpretation should have a phenomenological grounding. Following Heidegger (1996) and Gadamer (1989), text interpretation is concerned with elucidating what the text says, not necessarily better than the "author" (the participant) but in a different way that reveals something new. Although Gadamer was opposed to preoccupation with method, Dahlberg et al. (2001) claimed that a number of methodological hermeneutic principles clearly emerge from his work.

The first of these principles is a dialogical openness to what the text may have to say to us. The researcher not only questions the text but is, in a sense, willing to be questioned by the text. In other words, the researcher's preconceptions should be open to challenge from what emerges in the process of interpretation. A second principle is concerned with awareness of the power of tradition, and having a "healthy suspicion of oneself as a researcher" (Dahlberg et al., 2001, p. 202). A third principle is a cautious use of theory to

prevent one's prejudgments from clouding the hermeneutic process. The fourth principle is being open to "otherness" which is an understanding that arises not from the researcher's pre-understanding, but mainly from the text. These principles centre on the prejudgments the researcher brings to a project. The researcher needs to be aware of them and take steps so that the interpretations that are constructed are as true to the data as possible. The earlier chapters of this thesis have made clear my own prejudgments and assumptions on the issue of clinical reasoning and they will not be repeated here, but it is accepted that they exist and can influence the interpretations I made.

Following the principles above, the analysis proceeded by reading, several times, all the transcripts to get a sense of the whole. Some readings were made with the research questions in the foreground of consciousness, with a sensitivity to ways in which the text might be answering such questions. Other readings were made with an attempt to bracket the research questions and focus on what the text might be saying in and of itself. As themes emerged they were recorded on a large chart, together with notes that indicated the locations of quotations in the data that provided evidence for the themes. As analysis proceeded the themes were regularly reviewed, and occasionally some themes were divided and others merged. As analysis proceeded there was a circular or spiral process occurring, in which the parts were repeatedly related to the whole and back again. As interpretations emerged they were tested in this whole/part/whole manner. This has been described as the hermeneutic spiral or circle (Gadamer 1989).

To ensure rigour and credibility in the research I followed the guidelines of Dahlberg et al. (2001) who suggested a number of criteria for testing interpretations. These include the notion that an interpretation should illuminate as much of the data under consideration as possible, not just a fraction of it. There should also be attention to the temporal context in which a phenomenon progresses. Where a question arose about different possible interpretations, the overarching principle of "back to the things themselves" was applied, by returning to the data.

5.14 Conclusion

This was an interpretive project. The theoretical background was largely based on social constructionism, which entails the precept that meaning is constructed by individuals, using language resources provided by culture and affected by the cultural and personal history of the individuals involved. Therefore, hermeneutic phenomenology was used as an approach to come to a deeper understanding of clinical reasoning in the collective settings of PBL and multidisciplinary practice. Interviews, together with field notes made from non-participant observation, provided the data. Analysis followed principles of hermeneutic phenomenology, informed by the insights into language and culture provided by such authorities as Vygotsky.