IT professionals' experience of ethics and its implications for IT education

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Abstract

This study investigates variation in IT professionals' experience of ethics with a view to enhancing their formation and support. This is explored through an examination of the experience of IT, IT professional ethics and IT professional ethics education.

The study's principal contribution is the empirical study and description of IT professionals' experience of ethics. The empirical phase is preceded by a review of conceptions of IT and followed by an application of the findings to IT education.

The study's empirical findings are based on 30 semi-structured interviews with IT professionals who represent a wide demographic, experience and IT sub-discipline range. Their experience of ethics is depicted as five citizenships: *Citizenship of my world*, *Citizenship of the corporate world*, *Citizenship of a shared world*, *Citizenship of the client's world* and *Citizenship of the wider world*. These signify an expanding awareness, which progressively accords rights to others and defines responsibility in terms of others.

The empirical findings inform a *Model of Ethical IT*. This maps an IT professional space increasingly oriented towards others. Such a model provides a conceptual tool, available to prompt discussion and reflection, and which may be employed in pursuing formation aimed at experiential change. Its usefulness for the education of IT professionals with respect to ethics is explored.

The research approach employed in this study is phenomenography. This method seeks to elicit and represent variation of experience. It understands experience as a relationship between a subject (IT professionals) and an object (ethics), and describes this relationship in terms of its foci and boundaries.

The study's findings culminate in three observations, that change is indicated in the formation and support of IT professionals in:

1. IT professionals' experience of their discipline, moving towards a focus on information users;
2. IT professionals' experience of professional ethics, moving towards the adoption of other-centred attitudes; and

3. IT professionals' experience of professional development, moving towards an emphasis on a change in lived experience.

Based on these results, employers, educators and professional bodies may want to evaluate how they approach professional formation and support, if they aim to promote a comprehensive awareness of ethics in IT professionals.

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Statement of authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

_____ Date: _____

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Background of the author

Author's experience

Given the constitutionalist understanding of knowledge formation and the interpretivist approach to data analysis pursued in this research, it seems important to indicate what I, as the researcher, bring to this project.

I came to this project with some experience in education, ethics and information management. I hold an education degree, and have taught in the high school and university contexts. I hold a theological diploma (which included some ethics) and have been involved in the life of various local congregations. I hold an information studies degree, and have practiced librarianship at the high school and tertiary levels of education. I have applied each of these areas as a resident and worker in Australia, France and Cameroon.

I had also been engaged in several previous research projects using the research approach adopted for this study. These projects concerned the experience of students of learning to program, and the experience of students, faculty and practitioners of IT research. I have also taught IT ethics in a university Faculty of Information Technology and have co-edited, and co-authored chapters for, a book about teaching IT in that faculty.

Papers emanating from this study

The following papers were developed during this research project. Some sections of this thesis draw on the content of these papers, as indicated.

- Stoodley, I. (2006). *IT professionals' experience of ethical decision-making and its implications for IT education.* Paper presented at the 3rd International Conference on Qualitative Research in IT & IT in Qualitative Research Doctoral Consortium, Brisbane. (chapter 1)
- Stoodley, I. (2007). *IT professionals' experience of ethics and its implications for IT education.* Paper presented at the 18th Australasian Conference on Information Systems Doctoral consortium, Toowoomba. (chapter 2)

- Stoodley, I. & Bruce, C. (2008). *Expanding the IT territory: Creating space for ethical IT.* Paper presented at the 5th Australian Institute of Computer Ethics Conference, Melbourne. (chapters 2 and 5)
- Stoodley, I., & Bruce, C. (2008). *Opening ethical vistas to IT professionals.* Paper presented at the 10th ETHICOMP International Conference on the Social and Ethical Impacts of Information and Communication Technology, Mantua, Italy. (chapters 4 and 5)

These papers are accessible at http://eprints.qut.edu.au/.

Chapter 1. Introducing a study of IT professionals' experience of ethics

This study pursues an experience-based approach to information technology (IT) professional ethics, with a view to enriching the support offered to IT professionals in their practice of ethics. To date, research into IT professional ethics has predominantly focussed on external standards or internal reasoning. Attention also has to be paid to professionals' experience of ethics, based on which they interpret standards and construct reasoning. The study's findings indicate that a key to the effective support of IT professionals in their practice of ethics is the promotion of an increasingly other-centred experience.

1.1. The background to IT professionals' experience of ethics

Information technology is a relatively new discipline and in a continuous state of innovation. This discipline infancy and state of change place IT professionals in a susceptible position ethically, with little discipline-specific precedent or accumulated wisdom on which to base ethical practice. Although the discipline has undergone significant change, such change has not been matched with a development in ethical thinking in the field (Gotterbarn, 2004a). Moreover, some have predicted that the most demanding ethical issues surrounding computing are yet to present themselves (Moor, 2001). Ethical practice thus presents a formidable challenge to IT professionals, indeed "even though the computer revolution is often described as 'technological', in reality it is fundamentally social and ethical" (Bynum, 1999, p.17).

The significance of ethics for IT professionals is recognised by the professionals themselves, employers, academics and students. For example, an international survey of information systems professionals found that over 90% felt that organisations should enforce professional standards (Rogerson & Prior, 1999). An Australian survey of Information Systems (IS) professionals and educators (Snoke & Underwood, 2006) revealed they considered ethics to be an important element of graduating students' professional attributes. Another Australian study which compared student expectations of IS graduates

with those of employers found that both groups considered Business Ethics, a typical IS elective, to be important (Turner & Lowry, 1999).

Concerns have long been expressed about the direction computing technology threatens to take us. As early as 1948 Norbert Wiener stated, with reference to computers, "Long before Nagasaki and the public awareness of the atomic bomb, it had occurred to me that we were here in the presence of another social potentiality of unheard-of importance for good and for evil" (p.27). Parker noted in the 1960's that this potential was not taken seriously by the professionals who developed and managed the technology, saying, "It seemed that when people entered the computer center they left their ethics at the door" (Parker cited in Bynum, 2001).

The limitless new possibilities made possible by the "logical malleability" of computer technology create vacuums with respect to:

1. normative rules and policies; and
2. conceptual frameworks which help us understand emergent issues.

(Moor, 1985)

As our technological horizons expand at an accelerating rate, the need for ethical examination becomes increasingly important. "The human capacity to determine what we can do... [has] outstripped our ability to decide what we ought to do" (Preston, 2001, p.6). However, the drive for innovation continues to gather speed, leaving our ethical responsiveness lagging even further behind.

Ethical responsiveness in the IT environment demands a range of abilities. "Professionals must be aware of their professional responsibilities, have available methods for resolving non-technical ethics questions and develop proactive skills to reduce the likelihood of ethical problems occurring" (Rogerson, Weckert, & Simpson, 2000, p.121). A critical element in developing these abilities is the provision of a support system for practitioners who face ethical dilemmas in the course of their work.

One aspect of the IT professional response to this challenge has been to guide IT professionals in their ethical practice by means of codes of ethics, through professional bodies such as the Australian Computer Society (ACS). However, as helpful as it has been, the ACS code (ACS, 2003) is now 20 years old and in need of review (Bowern, Burmeister, Gotterbarn, & Weckert, 2006). Criticism of the ACS Code, for example, includes that it "ill

equips the modern computer professional for including environmental perspectives and dealing with environmental ethical dilemmas" (Wheeler, 2002, p.156). In general, the influential role of codes has been recognised (Munro & Cohen, 2004), however codes have also been criticised for being insufficiently comprehensive, internally inconsistent, presumptuous of pre-existing ethical attitudes, reactive in their approach to ethics and influential over only a limited percentage of practitioners (Grodzinsky, 2000; Johnson & Nissenbaum, 1995; Spinello, 2001; Tavani, 2004; Taylor & Moynihan, 2002; Wheeler, 2002). A complementary response appears to be necessary.

The aids to ethical practice proposed by researchers to date have been mostly oriented towards enabling professionals to apply codes of ethics or methods of reasoning when facing specific dilemmas (Harris, Cummings, & Fogliasso, 2001; Robbins, Wallace, & Puka, 2004; Rogerson et al., 2000). A prior influence seems to have been neglected, that is attention to professionals' experience of ethics. Social psychology and ethical decision making theories recognise the influence of personal perspectives (Cronan & Douglas, 2006). The research approach employed in the present study is well placed to offer insight into the personal aspect of ethical practice, through its examination of the relationship between subjects (in this case, IT professionals) and objects (in this case, ethics) (Marton & Booth, 1997).

The influence of the previous experience of professionals over their current ethical practice has been under-investigated in the IT ethics literature. Most studies approach ethics from a cognitivist (otherwise known as rationalist) perspective, whereby the influence of the professional's experience is not acknowledged or catered for. Thus, knowledge is presumed to be stable and consistently comprehended. An experience-based approach, on the other hand, recognises that humans, though living in an objective world, make sense of that world through their interpretation of it. Such interpretation is based predominantly on past experience which acts as a personal filter through which the world is seen (Sandberg & Targama, 2007). This powerful influence over professionals seems to have been largely overlooked.

Another response to the need for an ethical approach to technological innovation has been to emphasise the importance of ethics in the tertiary IT curriculum. The ACS Core Body of Knowledge includes an area of knowledge called "Ethics/Social Implications/Professional Practice" with a view to "expose students to existing standards of professional behaviour and to encourage in them a feeling and personal responsibility towards a commitment to

developing a personal ethical framework" (Underwood, 1997). Currently, however, the ethics content in tertiary studies is negligible (Denning, 2001b), an analysis of one undergraduate course revealing it occupies only 0.5% of course content (Snoke & Underwood, 2006). Many IT professionals have thus completed their formal education with only minimal preparation for ethical practice. Practitioners also draw on wider experience than students, which influences their approach to ethics (Cappel & Windsor, 1998; Prior et al., 2002). A response tailored to experienced professionals' needs and insights, and in the context of their work environment, seems necessary.

The impact of traditional interpretations of the territory of IT on IT professionals' practice has also not been sufficiently acknowledged. To date, IT has been principally approached as being technology-centred, practitioner-focussed and cognitively-based. This influences how IT, IT professionalism and IT ethical formation are understood, and frames professionals' expectations of how their professional practice ought to be pursued and developed. A re-orientation seems to be needed, in order to turn professionals' vision outwards towards the world that technology impacts.

Empirical studies of IT ethics often start with psychological theory which is then tested against experience using a quantitative method and statistical analysis (for example, O'Boyle, 2002; Robbins et al., 2004). In contrast, this project starts with the practitioner's experience and develops a model of ethical practice based on that experience. This lays a foundation for a new approach to professional development in ethical practice.

The proposal here is that the most effective means of influencing professionals' ethical practice rests in influencing professionals' experience of their discipline, their practice and their professional development. It is anticipated that out of a re-working of professionals' understanding of these elements of their professional life will flow changes in their practice. "Powerful ways of acting originate from powerful ways of seeing" (Pang & Marton, 2003, p.181).

1.2. Aim and significance of this study

In the light of the rapidly developing nature of the field and the increasing shortfall in ethical considerations around this development, this present study was designed in order to contribute to the conversation about what it means to be an ethical professional in the IT environment.

This study explores questions concerning current approaches to IT, IT professional ethics and IT professional ethics education. It concludes that current approaches do not offer a complete picture and portray a limited view of professional practice.

The aim of the study is to help advance the formation and support of IT professionals in the workforce with respect to ethics, by adopting an experience-first approach. Such an approach does not seem to have been adopted to date.

The main research question was: How may we help facilitate IT professionals' practice of ethics, from an experience-based perspective? The answer to this question was pursued through the following sub-questions:

1. What is the contemporary experience of IT?
2. How do today's IT professionals experience ethics?
3. What does it mean to adopt an experience-based approach to IT ethics education?

The empirical results of the study suggest that, for IT professionals to be best enabled to be ethical in their practice:

1. The purpose of IT must be primarily understood to be user-oriented;
2. The nature of professional ethics must be primarily understood to be other-centred; and
3. The goal of ethics education must be understood as primarily promoting a change in experience, towards others.

The most significant contribution of this study is its illumination of IT professionals' experience of ethics. The development of an experience-based understanding of the field provides a necessary foundation for insight into professionals' experience and the exploration of an experience-based education indicates the practical outworking of professionals' experience. Thus, professionals' experience constitutes the central feature of this project.

The significance of the study resides in its presentation of:

- an integrated, experiential system incorporating IT, IT professional practice and IT ethics formation;
- insight into IT professionals' experience of ethics;

- a description of IT from the point of view of its influence over others;
- a definition of IT professional ethics in terms of other people;
- a foundation for IT ethics education, from the perspective of learning as being a change of experience;
- models of IT and of IT ethics which illustrate other-centred conceptions of their respective natures;
- a challenge for change to IT, the professional workforce and professional formation; and
- an example of the application of the phenomenographic research approach to a study of ethics.

1.3. The scope of the study

In order to delimit the project and make it achievable, IT professionals were interviewed in South East Queensland only. This is a growing area of Australia which had potential for a wide range of participants.

Broad educational implications are suggested in chapter 6, however a comprehensive analysis of how the findings may be applied in an educational setting is not the focus of this research.

The experience of researchers as a group has been investigated in this study. The experience of subgroups is not pursued or presented, though many of these were represented in the sample. In particular, members of professional bodies and non-members of professional bodies are included in the sample, however no comparison is made of these groups.

The participants were volunteers and thus may only represent professionals who have an interest in ethics and who feel they have something to say about ethics. This may tend to eliminate neutral or negative opinions, which would need to be investigated by a different study.

1.4. Some key concepts

For clarity, it is necessary to indicate from the beginning the way some concepts, which are represented in various ways in the literature, are used in this account. This is a summary. More detailed discussion appears later in the document.

1.4.1. Information technology

The broadest definition of *information technology* embraces not only the development of the technology employed in the manipulation of information but also human activities which employ that technology, such as knowledge management (Finkelstein & Hafner, 2002; Gorgone, 2001). Thus, *computer science* may be seen as referring to the more technical (hardware and software) aspects of the IT profession and *information systems* the management of information by IT professionals. These aspects of information technology are interrelated and the boundary between them in practice is not clear. A primary goal of this study is the representation of a breadth of variation of experience. Therefore, I adopted a broad definition of information technology to define the scope of this study and employ information technology here as an umbrella term to embrace, for example, computer science, information systems and information management.

1.4.2. Ethics

Traditionally, ethics has been defined in terms of the agent. Thus, the agent's actions or processes have formed the starting point for ethical frameworks. Such a starting point pre-determines much of the shape of ethics, in conformity with the agent themselves. In contrast, I accept the argument that ethics is more appropriately defined in terms of the object, that is in terms of others (Floridi, 1999; Levinas, 1979). Others thus play a central role in determining the nature of ethical frameworks. An other-centred orientation provides the standard for ethical practice and lays the basis from which deliberations about ethics may proceed. This position is corroborated in the current empirical study and in the literature.

1.4.3. Professionalism

Traditionally, professionalism has been seen in terms of fulfilling a list of requirements. This list has included membership of a professional body (which includes agreeing to a code of ethics), attainment of a specified training level, the pursuit of on-going professional

development and licensing from the national government (Sizer, 1996). It seems apparent that a practitioner may fulfil all of these requirements and yet pursue unethical practice because they do not actually experience their discipline or practice as admitting room for ethics. Thus, I argue that, with respect to ethical responsibility, an appropriate standard of professionalism is the quality of professionals' relationships with others. An individual who carries a professional attitude may strive to fulfil the formal requirements of a professional body but, much more, will be professional in their practice, whether the formal checklist has been fully met or not.

The term *professional* refers in the early part of this document to someone who regards themselves as a professional. All of the people I interviewed fit into this category, so the resulting analysis is understood to depict professionals' experiences. Towards the end of the account I distinguish between a technician, practitioner, professional and professional master.

1.4.4. Experience

Various words or phrases are used here to express the idea of experience. Conception, understanding, view and way of seeing are all synonyms. These indicate the relationship between a subject (usually here IT professionals) and the object of that subject's attention (usually here ethics).

The idea of *experience* as used in this study can be understood by contrasting two alternative approaches to knowledge. According to one approach, reality is separate from the individual and knowledge is gained by the individual aligning themselves to this external reality. This objectivist approach is dualistic, whereby the individual and reality are distinct from each other. According to the other approach, reality is intimately connected to the individual and knowledge is gained by the individual constructing meaning themselves. This is a constructivist approach, whereby the individual determines the meaning of reality (Svensson, 1997). These stand in contrast to the approach followed in this project.

The relational approach pursued in this study understands that the individual and reality are distinct but intimately related. Even though there is an external reality, humans always interpret that reality through their experience. The subject (the one experiencing) stands in relation to the object (the phenomenon which they are experiencing), with each (both subject and object) contributing to the experience. This is a *constitutionalist* (or

interpretive, or relational) approach, whereby meaning is constituted by the interaction of subject and object (Bruce, 1997; Ramsden, 1992; Trigwell, 2000). Knowledge is the developing relation between the individual and reality.

1.4.5. Education

Building on a constitutionalist view of knowledge, learning is defined as a change of experience, rather than being simply cognitive or behavioural (Ramsden, 1988). Education is therefore about stimulating a change in the way a person (in this case, an IT professional) relates to a phenomenon (in this case, ethics). The learner's personal engagement with and understanding of the relevance of the phenomenon are integral to this approach. The retention of facts or mastery of processes may be expected to result from, but are peripheral to, the aims of such an education.

Education is used in this study to signify a variety of support structures in the workplace, which include formal training as well as less formal assistance. Synonyms of education seen this way include professional development and workplace learning.

1.5. Overview of this thesis

Much research has already been conducted into IT professional ethics. In chapter 2 the literature in the area is surveyed, in order to understand where such research has led us thus far and what this might mean with respect to the research question pursued in this current project. This is organised in terms of the experience of IT, the experience of IT professional ethics and the experience of IT professional ethics education. Here I propose approaching IT through a Model of Evolving IT which maps the evolution of the field towards increasing focus on the information user. Professional ethics is interpreted as being other-centred and from this a Preliminary Model of Ethical IT is developed. I propose that a goal of effective IT ethics education is to bring about a change of experience.

In order to approach such a project, an appropriate method needs to be chosen. In chapter 3 the demands of the current investigation are considered and the chosen method, phenomenography, described in detail, and reasons given for its applicability for pursuing a response to the study's question. In essence, phenomenography provides a means of eliciting, analysing and presenting a rich phenomenon such as the experience of ethics and offers, through variation theory, a way of applying those findings to promote learning.

This study is grounded in the lived experience of IT professionals. In chapter 4 the results of the project's empirical research into IT professionals' experience of ethics are presented. The participating professionals experience ethics in five qualitatively different ways. These ways of experiencing ethics progress along dual continua of responsibilities and rights, whereby both are increasingly defined in terms of others.

The different experiences of ethics are characterised as cumulative *citizenships*, signifying places where IT professionals feel at home in the ethical landscape:

1. *Citizenship of my world*;
2. *Citizenship of the corporate world*;
3. *Citizenship of a shared world*;
4. *Citizenship of the client's world*; and
5. *Citizenship of the wider world*.

These are described in detail and their interrelationships explained.

The contributing elements of the previous chapters now need to be brought together into a cohesive whole. In chapter 5 a framework for IT professional ethics education is proposed. This presents the practical ramifications of the responses found to the research question. The result is a Model of Ethical IT which maps the evolving discipline against other-centredness. The usefulness of this model for ethical formation and support is explored, and suggestions provided for its application in that context.

In chapter 6 the implications of the preceding chapters are discussed. The consequences of the conclusions drawn in response to the research objectives are suggested. The study's outcomes and contributions are summarised, addressing the questions: What does this study contribute to IT? What does this study contribute to IT professional ethics? and What does this study contribute to IT professional ethics education? The study's contribution to the method and other disciplines is also considered. I also indicate the study's limitations and make recommendations for further research.

Chapter 2. Reviewing the experience of IT, ethics and education

In order to understand the potential contribution of the current project, we need to consider where previous research and thinking have brought us thus far and how the present study may advance our understanding of IT professional ethics education. The review in this chapter is organised according to this project's interest areas of IT, IT professional ethics and IT professional ethics education.

The way IT, IT professional ethics and IT professional ethics education have been conceptualised to date has resulted in particular ways of understanding the field and operating in it. While illuminating some aspects of the field, such conceptualisations have by nature also masked attention from other aspects. In order to break into new territory a new conceptualisation of the IT professional ethics education space is needed, from which new ways of operating may be envisioned and executed.

In this chapter I examine:

1. the way IT, IT professional ethics and IT professional ethics education have typically been conceived to date;
2. what alternative approaches introduce new ways of conceiving of these aspects of the field; and
3. the implications of these alternative approaches for future practice.

I also consider the research need this study seeks to fill in IT professional ethics and IT professional ethics education.

This lays a foundation for a new approach to IT professional ethics formation and support.

2.1. Experiencing IT

Our experience of IT has changed over the last half century, leading to a new conceptualisation of IT. It is argued here that from an ethical point of view, this change is constructive and to be applauded.

2.1.1. How IT has been experienced to date

Despite concern about the social impact of computing from its beginnings (Wiener, 1948), IT has been typically conceived in a techno-centric way. Seeing IT thus, hardware and software development is identified as the core business of the IT professional (Burnett & Subramaniam, 2004). Thus, technology defines the essential character of the IT field.

> ... observers of the industry agree that a small set of fields — computer scientists, computer engineers, systems analysts, and programmers — constitutes the 'core' of the information technology workforce. (R. Ellis & Lowell, 1999, p.1)
>
> By computing professional I mean anyone involved in the design and development of computer artifacts. Computer artifacts include such things as program documentation, test plans and test cases, feasibility studies, source codes, user manuals, system-maintenance manuals, and design documents, that is, all the products of the system-development process. (Gotterbarn, 1991)

From this perspective, software development cycles may include the user, not however as a central player. For example, a model derived from research involving four telecommunications companies (which indicates an alignment with industry practice) discusses the skills needed for software development in an entirely artefact-centric way, "software development is concerned with the production of various artifacts" (Downey & Power, 2007, p.187). Although customers and end users are mentioned in this model, they do not figure prominently in it. In contrast, others in the industry indicate the need for change, so that software development becomes more collaborative and engaged with the user (Fischer, 2001).

Recent empirical research has found that IT researchers hold a breadth of views of the field, conceiving of the core elements of IT in five ways (Pham et al., 2005):

Category 1. Technology.

Category 2. Information.

Category 3. Technology, information.

Category 4. Technology, information, people.

Category 5. Technology, information, people, applications.

Category 1 (Technology) focuses on "the manufacturing of technological artefacts, development of new systems, writing of mathematical formulae or creation of programming code..." Researchers seeing the discipline this way look for terms such as hardware, software, computing science, systems design, algorithm and programming as indications that research is IT research (Pham et al., 2005, p.222). From this traditional

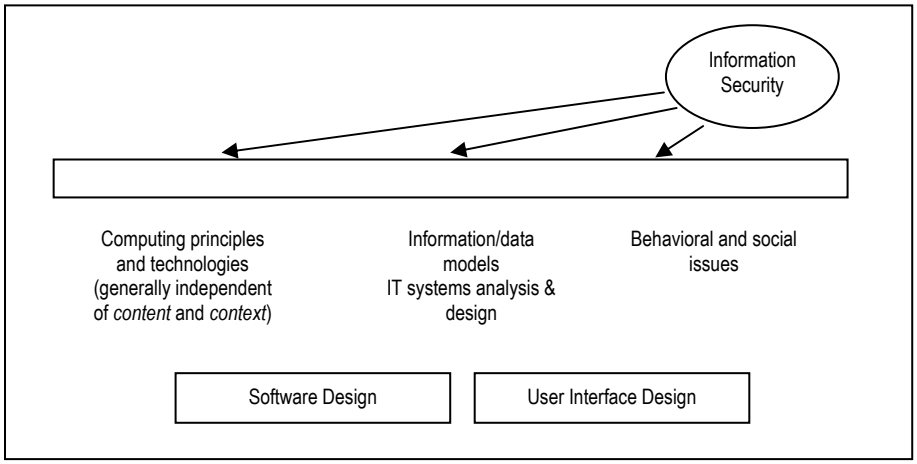

Figure 2.1 Subject matter continuum of the broad IT discipline (Finkelstein & Hafner, 2002)

conception of IT, IT researchers progressively include information, people and applications (moving through Categories 2 to 5) in their experience of IT. Technology recedes steadily into the background.

Such breadth of views is also recognised in a model developed by Finkelstein and Hafner (2002) (Figure 2.1) which represents the discipline as a continuum from computing principles, through information sub-disciplines, to social issues.

A reading of the recent IT literature reveals a range of opinion regarding the territory of IT. The proliferation of terms used to describe computing activities (Computer Science (CS), Computer Information Systems (CIS), Management Information Systems (MIS), Information Systems (IS), Information Management (IM), to name a few) indicates this range (Lenox & Woratschek, 2003), leading to overlapping and conflicting meanings (Anthony, 2003). Attempts to define the field from different viewpoints, for example based on industry, occupation or education, have illustrated the difficulty of a precise definition of such a growing field (Denning, 2001a; Kuh, 1999).

The IS literature of the 1990s evidenced five views of IT - the Tool View, the Computational View, the Ensemble View, the Proxy View and the Nominal View (Orlikowski & Iacono, 2001). The Tool View focused on the engineered artefact and the Computational View focused on the technology's processing ability. These clearly artefact-oriented views accounted for almost 45% of the topics covered by IS articles, showing a significant interest in the artefact. However, a large proportion of papers (almost 25%) adopted the Nominal View whereby they only referred to technology incidentally.

These observations indicate the need for professionals to step beyond definitions of IT bound by traditional borders designated by the artefact, in order to remain in step with a rapidly evolving field.

2.1.2. An alternative experience of IT

I propose we turn our attention to an alternative understanding of the core business of IT. In so doing we may acknowledge and build on the changes evidenced in the literature and in empirical research. This view puts the artefact user (and the information they seek) in the centre of IT professionals' practice.

Information is attracting growing attention in IT. In contrast to the traditional, technology-centric view of IT, information management is coming increasingly into focus as integral to the IT space. As noted earlier, recent empirical research has revealed that some IT researchers emphasise the use of information (Pham et al., 2005).

Similarly, many definitions of IT include a broad spectrum of occupations, including "knowledge workers" (Gorgone, 2001, p.11). In 2002 the IT Deans Group of the Computing Research Association of North America, consisting of 30 colleges and schools of information technology, proposed "a new IT discipline with a new research agenda" which included the study of information, "how it is acquired, organized, communicated, managed and used by people and organizations, and how IT changes those processes, sometimes in fundamental ways" (Finkelstein & Hafner, 2002). In fact, one survey of "US library and information associations" includes the Association for Computing Machinery, the Association of Information Technology Professionals and the Institute of Electrical and Electronics Engineers (Koehler, 2002). Thus, the relationship between information and technology is fundamental to a definition of IT.

Additionally, a distinction often raised in defining IT is that of artefact developers in contrast to artefact users, whereby for some artefact development lies within the scope of IT and artefact use does not. Again, this is evidenced in the literature and recent empirical research findings (Pham et al., 2005).

For some, artefact development defines the limits of the field. For example, a Computing Research Association categorization of IT jobs defines each one in terms of its relation to the IT artefact (Freeman & Aspray, 1999). A distinction is made between IT-enabled workers and IT workers by measuring their use of IT knowledge against their use of domain

(industry or business) knowledge. If IT knowledge is more important than domain knowledge in their work, the occupation belongs to the IT worker group, that is, "If more than half the value provided by a worker involves his or her IT knowledge, then this person is considered to be an IT worker" (Freeman & Aspray, 1999, p.31). Thus, a business project manager is an IT-enabled worker but a software project manager is an IT worker. Formal IT knowledge, in contrast to job-related application knowledge, is identified elsewhere as a distinguishing characteristic of an IT professional (Armitage & Karshmer, 2003). Another categorisation divides IT jobs into four groups - conceptualizers, developers, modifiers/extenders and supporters/tenders - based on the assumption that the practitioners are "responsible for creating IT artefacts" (Freeman & Aspray, 1999, p.33). Technical know-how and artefact development are clearly represented here as characteristic IT skills.

In contrast, others recommend "a definition of the IT field that includes not only the technical aspects, but all aspects of IT development and use - including the technical, cognitive, managerial, social, and economic aspects" (Finkelstein & Hafner, 2002, p.2). Indeed, the developer-end user distinction is becoming increasingly difficult to sustain, since, for example, "some so-called 'user' jobs involve systems and web development using powerful desktop tools" (Kaarst-Brown & Guzman, 2005, p.4; Orlikowski & Baroudi, 1989).

> Today, a Web developer is more likely to work with established software applications to develop a site, and therefore, traditional programming skills are not emphasized. (Subramaniam & Burnett, 2006)

The developer is becoming more like a user and the user like a developer. Technical tasks have been performed, for example, by librarians who have played pivotal roles in the development of standards for global data transfer such as MARC, Z39.50 and Metadata (Gartner, 2004; Hopkinson, 2004). These data protocols define the data structure of databases and the method of data transfer between databases, and thus lie at the core of IT artefact development and therefore at the core of traditional IT activity. Definitions of information management may now include information systems which embrace hardware, software and data – "the invisible tools that support information processing" (Rowley, 1998, p.364). The distinction between the developer and the user has been key in the past, but is becoming increasingly ill-defined. Thus, the relationship between artefact developers and artefact users is also fundamental to a definition of IT.

Critics of the traditional artefact developer-centric view of information technology call for a change of direction, towards information users.

> I have called the approach human-centric computing, and the machines human-centered, to emphasize that from now on, computer systems should focus on our needs and capabilities, instead of forcing us to bow down to their complex, incomprehensible, and mechanistic details. (Dertouzos, 2002, p.xii)

One suggestion is that human-centred systems embrace five core qualities - they talk with us, do things for us, get the information we want, help us work with other people and adapt to our individual needs. This requires a completely new operating system that can handle human-centred processes such as "speech, automation, information access, collaboration, and customization" and which "support a new information model which is meaning oriented" (Dertouzos, 2002, p.133).

The user and their information needs are increasingly at the centre of IT. Attention is turning from the tool to its purpose.

2.1.3. The implications for IT: A Model of Evolving IT

A re-conceptualisation of IT is modelled here, calling into question artefact- and developer-centric definitions of the field and illustrating IT's turn towards the information user. The advantage of introducing a new conceptual model is that it helps us to re-visualise the IT space and conceive of the new relationships this implies, and provides a tool to support reflection and debate (Morecroft, 2004; Pidd, 2004). This model is designed to facilitate a re-framing of the IT territory and to consequently prompt reflection concerning our expectations of it and our behaviour in it. The ideas it presents are predominantly already in the literature, however they are not given the same emphasis or presented in the same way.

The *Model of Evolving IT* (Figure 2.2) maps the apparent evolution of the IT territory from its traditional technological roots to a more user- and information-centred perspective.

Traditional IT (the bottom left-hand side of the inner rectangle) represents technological development with marginal reference to application. This is artefact- and data-oriented, and concerned with efficiency and overcoming barriers to technological advances, as presented by the technology itself. *Evolving IT* (the upper right-hand side of the inner rectangle) mediates this technological development to people. It is user- and information-oriented, and concerned with meeting needs defined outside the technological community. The combined *Traditional* and *Evolving* IT represent the trend of IT (indicated by the arrow in the centre), with both artefact development and mediating roles included as part of IT.

Mediation is understood here to include enabling users, but also acting as an intermediary between the user and the artefact. Users in Traditional IT are enabled to change for the sake of the technology; users in Evolving IT are assisted by mediating professionals who strive to not only assist the user as they interact with the artefact but also to influence the technology so it becomes more user-friendly. The mediating IT practitioner makes the artefact more approachable to the user and takes the user's side, not just the technology's; they broker a meeting of the two.

> All computing artifacts are designed to be used. Computing has had a tendency, though, not to see itself as a service industry. Even the term "user" carries with it a derogatory connotation. (Gotterbarn, 1991)

An emphasis on the user begins to orient IT outwards, beyond itself, and towards an ethical standpoint. Nevertheless, this conceptualisation requires further development. We will return to this thought later in this chapter, and in chapters 5 and 6.

In accord with the *Evolving IT* concept, Denning comments on the changing scope of computer science, beyond the artefact, "Today, programming is neither the dominant practice nor the defining practice" (2004, p.18). From this standpoint, IT definitions include intensive users (Denning, 2001a), and services such as consulting and support (Iansiti & Richards, 2006).

> Traditionally we think of the IT professional as computer scientists (CS), computer engineers (CE), information systems analysts (IS), software engineers (SE), and computer programmers. The scope of the IT worker is much broader than that. It includes consultants, knowledge workers that use technology, and the many other professions that work... to identify, analyze, propose, implement, improve, maintain, and use information

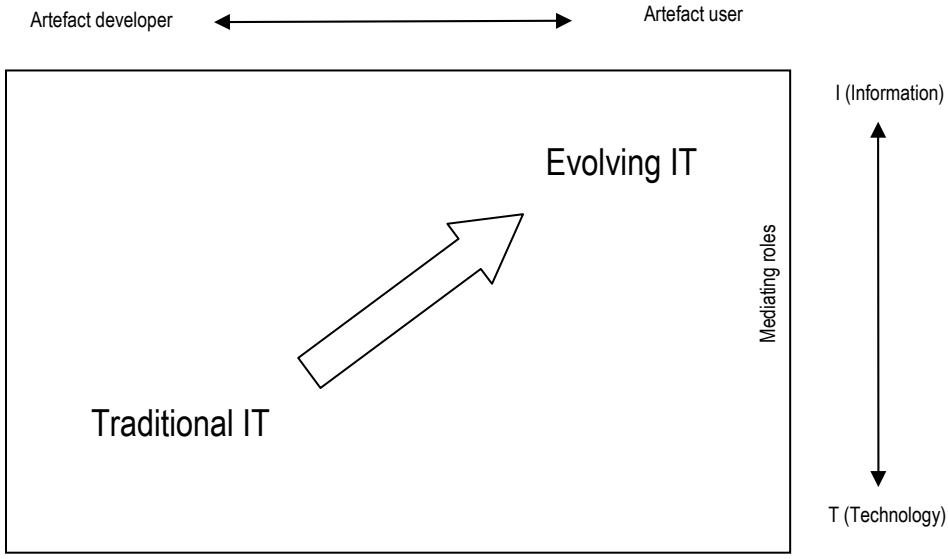

Figure 2.2 A Model of Evolving IT

> technology-based solutions. (Gorgone, 2001, p.11)

Similarly, others argue that the IT artefact needs to be "put in its rightful place" and viewed as part of wider "IT-reliant work systems" which include the user's perspective (Alter, 2003, p.370).

> Many educational programs are focused on the bits-and-bytes level and on technology. However, the new IT professional needs to be a well-rounded employee with "value-delivery" skills in addition to technical knowledge and skills. Value-delivery skills consist of business and communication skills. They deal with the interaction between the employee and the customer or client... (Peterson, Morneau, & Saad, 2003, p.29)

This emphasis on the user reflects the pervasive scope of the discipline, "The more IT becomes integrated with and essential to our lives, the more urgent is the need to consider IT from more than a purely technical perspective" (Finkelstein & Hafner, 2002, p.2).

Thus, we see IT evolving over time, broadening from its technological roots.

From the discussion above, we see evidence for an evolution of attention in IT, from the artefact development space into the artefact user space. Thus, mediating roles between the technology and the user have come more into focus and become increasingly part of IT, including such services as applications training and support, and knowledge and information management. Any specific activity within IT may be located at any point along the Traditional-to-Evolving IT range, determined by the perspective adopted by the IT practitioner. Thus, for example, software development may be pursued in a technology-centric or in a user-centric way.

Recent empirical research has revealed that IT researchers view the territory in ways that represent the full scope of this diagram (Pham et al., 2005). This evolution of the territory of IT is reflected in the following phases of development observed in the computer field:

1. In the late 1940s to mid-1960s it concentrated on overcoming hardware constraints. Engineering was the dominant focus.
2. In the mid-1960s to the early 1980s it concentrated on overcoming software constraints. System development was the dominant focus.
3. In the late 1970s to the early 1980s it concentrated on empowering end users. Socio-technical factors were the dominant focus.
4. In the current period, to 2007, it is concentrating on its re-definition with a questioning of the boundaries between society and IT. Social concerns are the dominant focus.

(Brigham & Introna, 2007, p.2)

This project seeks to contribute to this last phase of the development of the field. The *Model of Evolving IT* (Figure 2.2) demonstrates the changing nature of the discipline and the influence that has over our conceptualisation of the relationship between professionals working in the field and the wider world. We see a discipline today more closely associated with its clients. However, is this sufficient for the discipline to claim to be operating ethically?

2.2. Experiencing IT professional ethics

From the experience of the discipline of IT, we now turn to the experience of IT professional ethics. I consider IT ethics and IT professionalism to be closely related, as ethics is typically integral to a discussion of professionalism and central to its definition.

Under traditional frameworks of professionalism, professionals have long been expected to:

1. meet recognised educational standards;
2. hold an approved tertiary qualification;
3. have relevant experience;
4. adhere to an established code of ethics;
5. accept personal liability;
6. possess a licence or certificate to practice; and
7. make a commitment to continuing individual professional development.

(Gotterbarn, 2004b; Sizer, 1996; Underwood, 1994)

These expectations set professionals apart from other workers and have been recognised by society as their defining traits.

Koehn (1994) offers a similar list of standard qualifications for professionals:

1. are licensed by the state to perform a certain act;
2. belong to an organization of similarly enfranchised agents who promulgate standards and/or ideals of behavior and who discipline one another for breaching these standards;

3. possess so-called "esoteric" knowledge or skills not shared by other members of the community;
4. exercise autonomy over their work, work which is not well understood by the larger community; and
5. publicly pledge themselves to render assistance to those in need and as a consequence have special responsibilities or duties not incumbent upon others who have not made this pledge.

(p.56)

According to Koehn (1994), although the final criterion on her list above "is perhaps the most controversial, it is also the one which is the most defensible. The other traits are neither necessary nor sufficient to define a professional" (p.56). Her argument is considered in greater detail later in this chapter.

The literature does not always identify IT ethics as "professional" ethics. If, however, we accept that a professional will grapple with ethical issues pertaining to their field, then IT ethics and IT professional ethics become inseparable as subjects of discussion. Koehn (1994) believes that the primary distinction between a technician and a professional is serious engagement with the responsibilities that attend the field in which they are working, with the goal of serving their clients' good. This means adopting a special relationship with their customer base, whom a technician may just relate to as *customers* (that is, sources of income) but whom a professional relates to as *clients* (that is, people in need of a certain good which they have pledged to help them obtain).

Central to my discussion of professional ethics is an appeal to think beyond lists of formal qualifications, towards core values. An ethical IT professional thus becomes recognisable not because they can point to a checklist they have fulfilled at a point in the past but because their clients bear witness to the way the practitioner currently conducts their daily business. The checklist may be one aspect of formally becoming a professional, however if in their daily practice the practitioner does not adopt certain core attitudes, notably concerning their relationship with their clients, their qualification as a professional is called into question. Of the qualifications listed above, most are attained by the professional before starting their practice. Adherence to an ethical standard, however, is an on-going expectation and one which provides just cause for eviction from professional membership if it is not upheld (for example, in section 7.1.1, ACS, 2007, p.9).

Relevant to this discussion is the distinction made by some between *individual professionalism* and *occupational professionalism*, whereby individual professionalism refers to professional attitudes upheld by individuals in the course of their work and occupational professionalism refers to the formal acknowledgement in society of an occupation as a profession (Orlikowski & Baroudi, 1989). Such a distinction reflects a change in approach to professionalism and hence a change in approach to professional ethics. The pledge to serve the public good used to be much more prominent in the professions. Now professionals are employed by organisations which expect loyalty to the organisation's goals, which are often market-driven (Thompson, 2005). This signals a potential conflict of interest, which the individual professional must manage.

My interest plainly lies more in individual professionalism than in occupational professionalism. I argue that, concerning professional ethics, the onus is on individuals to adopt professional attitudes, whether or not their occupation qualifies for professional status according to the traditional checklist. Indeed, an occupation which qualifies as a profession depends on the participation of individual members who conduct themselves professionally.

The definition of *professional* from the individual's point of view is consistent with an understanding of knowledge as being constituted, rather than simply received. According to the constitutionalist view of knowledge, there may be an external reality, however the only reality we know as humans is our experienced reality. It is of note that one of the early empirical researchers into moral development, Piaget (1954), held a non-cognitivist view of knowledge and the father of cybernetics, Weiner (1948), also subscribed to a similar epistemological stance. I suggest that, from a constitutionalist standpoint, a recognised checklist of who qualifies as a professional may exist, however the practitioner who aspires to be a professional will interpret the experience of being a professional in their own way. Conversely, practitioners may not qualify as occupational professionals according to a certain checklist, nevertheless they may experience themselves as practicing individual professionals, including upholding professional ethical standards. From a constitutionalist perspective, the participants included in this study, who regarded themselves as professionals, represent IT professionals' experience of ethical practice.

I now describe professional ethics, firstly as it has been typically experienced, then from alternative viewpoints and lastly I propose a re-conceptualisation of IT professional ethics.

2.2.1. How IT professional ethics has been experienced to date

The discussion of IT professional ethics in the literature is characterised here as falling into three broad categories. IT professional ethics has been conceived of as i*ssues*, *methods* and *philosophy*:

1. *Professional ethics as issues* is concerned with specific instances of ethical dilemmas.
2. *Professional ethics as methods* is concerned more globally with generic ways of responding to issues.
3. *Professional ethics as philosophy* is concerned with the wider philosophical base for approaching IT ethics.

2.2.1.1. IT professional ethics as issues

In viewing IT professional ethics as issues, the focus is on specific instances of potential ethical dilemmas in IT. In the literature these instances orient themselves towards information use and software development.

The majority of studies and discussion in the literature focus on information use. In this context, specific information issues which are studied, alluded to or the subject of ethical scenarios include plagiarism (Jones, 2004), identity theft (Leonard et al., 2004), fraud, misappropriation of company funds, breaches of confidentiality, falsification of records, unauthorized access of information, destruction or theft of information (Munro & Cohen, 2004), information security (Takanen, Vuorijarvi, Laakso, & Roning, 2004), intellectual property (Peace, Galletta, & Thong, 2003) and free expression (Spinello, 2003). Reference is sometimes made to Mason's (1986) categorisation of these into the PAPA framework: privacy, accuracy, property and accessibility (T. S. Ellis & Griffith, 2001), though some authors question this schema's usefulness because it is not sufficiently comprehensive (Fairweather, 2004).

Another issue attracting some attention has been the ethical values inherent in software. It is suggested that this issue demands a comprehensive assessment of the implications of software for all those who are likely to be affected by it (Rogerson, 2004). Such responsibility may be either avoided or unappreciated because software developers see their task as being value-free (Gotterbarn, 2004b). An appreciation of the various layers of responsibility in the software development process is required of an IT professional, to

enable them to comprehend the risks associated with their role and, with regard to security concerns, systems put in place for the detection and resolution of software vulnerabilities (Takanen et al., 2004).

2.2.1.2. IT professional ethics as methods

In viewing IT professional ethics as methods, the focus is on a systematic methodology which may be used to find solutions across various IT ethics scenarios.

Such an approach to the practice of ethics is typically the result of viewing IT professionals' ethical practice as essentially involving decision making and such decision making as a rational process. Thus, ethical decision making is "the reasoned and principled process by which reflective moral judgments are rendered" (Maner, 2004, p.41). Influencers of decision making are discussed in the section on education (2.3).

Step-wise procedures have been proposed to guide such deliberations, for example this six step process of ethical decision making:

1. Moral perception and personal knowledge of the moral good;
2. Moral discernment and personal ability to think logically;
3. Moral resolution and personal ability to think analytically;
4. Moral assessment and personal ability to assess one's freedom;
5. Moral decision and personal knowledge of one's duties; and
6. Moral action and personal willingness to follow one's intellect.

(O'Boyle, 2002, pp.272-274)

Another proposed schema uses a combination of heuristic ethical decision making procedures synthesised into the procedural steps of preparing, inspecting, elucidating, ascribing, optioning, predicting, focusing, calculating, applying, selecting, acting and reflecting (Maner, 2002).

Some have argued for the incorporation of ethics into established procedures, such as the Structured Systems Analysis and Design Method (SSADM) (Taylor & Moynihan, 2002). Alternatively, computer tools have been developed to steer the decision maker through a systematic process (O'Boyle, 2002), which have been assessed as effective in helping participants achieve comprehensive case analyses (Robbins et al., 2004). Some assert that

ethical problem-solving can be systematised to the point where it is able to be mimicked by a computer, which could play a significant role in aiding ethical decision making (Robbins, 2005).

These approaches emphasise the role of logic in ethical decision making. They typically align with the moral development framework of Kohlberg (1981) which also emphasises rational processes and links moral development with cognitive development. (Kohlberg's stages are presented under ethics education, in section 2.3.)

2.2.1.3. IT professional ethics as philosophy

In viewing IT professional ethics as philosophy, the focus is on its theoretical foundations.

All approaches to ethics reflect a particular way of seeing the world and are therefore a philosophical statement. A person's concept of the specific issue of software piracy, for example, will influence their understanding of what is acceptable and unacceptable behaviour. Thus, a conceptual shift concerning piracy has the ability to change an individual's view of digital copying from ethical to unethical behaviour (Cronan & Douglas, 2006). Although such conceptual schemes have attracted a degree of attention, some think that IT ethics research lacks theoretical depth; an observation, for example, made of research into gender issues in computing (Adam, 2000).

In this regard, there has been some deliberation over the nature of IT ethics in relation to the wider world of ethics. The views expressed fall into at least three groups:

1. those who see IT ethics as the application and extension of traditional ethics in IT scenarios (for example, Johnson, 1985);
2. those who see IT ethics as properly belonging to professional ethics (for example, Gotterbarn, 1991); and
3. those who see IT ethics as meriting status as a new field in its own right (for example, Gorniak-Kocikowska, 2004; Maner, 2004).

The application of *traditional ethics* to IT scenarios is able to draw on a long history of debate over what constitutes an ethical stance. This debate may be organised into three broad approaches: deontological ethics (the ethics of duty), teleological ethics (the ethics of consequences) and virtue ethics (the ethics of character). These represent the thinking of well-established philosophers such as Plato, Aristotle, Kant, Bentham, Mill and Hobbes. However, the traditional approach is criticised as running the risk of blocking important

points of view through its conservative stance and lack of openness to new perspectives necessitated by new circumstances.

The application of *professional ethics* to IT enables a focus on specific issues and places the burden of responsibility squarely on IT professionals and their instructors. However, it is criticised as being too narrow, since IT professionals are not the only ones taking ethical decisions in the IT environment.

The arguments for according a *separate status* to IT ethics appeal to the revolutionary character of IT - its malleability, its rapid expansion into new areas, its global nature, its convergence of previously separate technologies and the pressure it places on traditional frameworks.

The importance of ethical theory is highlighted by the fact that the theoretical paradigm from which IT ethics is approached has a comprehensive effect on the conclusions drawn and insights gained. Theory is understood thus to be the only sound basis for ethical practice, providing "conceptual grounds that can guide problem-solving procedures" (Floridi & Sanders, 2002, p.8). This is preferable to case-based approaches which result in "inconsistencies, inadequacies and an unsatisfying lack of general principles", and tactical approaches which risk "the spreading of ad hoc or casuistic approaches to ethical problems" (Floridi & Sanders, 2002, p.1).

Concerning ethical theory, traditional bases for computer ethics typically focus on the agent or the agent's actions, however an alternative is to place the object in focus. Such an alternative has been developed into a proposed Information Ethics which is an information-based ethic in contrast to the prevalent biologically-based ethics. This is considered to place all information entities on equal footing and puts the receiver of an action in the centre of attention (Floridi & Sanders, 2002).

2.2.1.4. A hierarchy of insights

The approaches to IT professional ethics outlined above exert an increasingly pervasive effect on the field. A specific issue is approached using a particular method, which is built on a certain philosophical foundation. This seems to indicate a hierarchy of impact, with philosophical foundations exerting a pervasive influence.

2.2.2. An alternative experience of IT professional ethics

I adopt here an alternative philosophical foundation for IT professional ethics and discuss the potential significance of its influence. Floridi and Sanders (2002) signalled the importance of an object-focussed rather than subject-focused theoretical foundation for ethics. I adopt a similar view, displacing the agent from the focus, however in my case placing others in the centre of attention. My pursuit of an other-focussed ethic means a focus on other people, or more to the point a focus away from the "individual ego-centric self" (Brigham & Introna, 2007, p.6).

In adopting this alternative view, I draw on the insights of Emmanuel Levinas and Daryl Koehn. Levinas (1998) frames ethics in terms of our relationship with other people. Koehn (1994) defines the ground of professional ethics in terms of a promise to serve a client. Together they offer a means of expanding the scope of IT professional ethics into new, other-centred areas. An other-centred orientation is not foreign to IT ethics. Denning (2001c) asserts that a profession "embodies a core value of listening to its clients and for being socially responsible" (p.17), that is, of being concerned for others, and Spinello (2001) suggests the primary guide for conduct is the consideration of "the needs and concerns of others" (p.150). Such an approach applies across cultures, as indicated by a statement of a global ethic constituted jointly by a broad spectrum of religions, which embraced consideration for others as its foundational standard (Schweiker, 2004).

The purpose in taking this approach is to build IT professional ethics on a foundation of approaches to professionalism, general ethics, professional ethics and cultural values which do not seem to have been explored in depth before by IT ethicists, and thus hold promise to shed new light on IT professional ethics. We will now consider these approaches to ethics in more detail.

2.2.2.1. Professionalism in the Information Age

The conditions under which professionals work have changed dramatically since the growth of the first professions. The autonomy which has been associated with professional membership, whereby professionals are responsible for the regulation of their own behaviour, is now breaking down through the employment of professionals in large organisations to whom they are held accountable. Further, clients are more knowledgeable about their own rights and the kinds of services they seek, and themselves have legal means through which they can call the professional to account (Dent &

Whitehead, 2002). Thus, the services that distinguish the professional from others now orient around adding value, as defined by the client. The client has considerable say in the kinds of services they seek and how those are delivered. In this way, the relational and economic distance between professional and client is breaking down. Some say IT is noticing this change before others, because it is at the forefront of the transition (Denning & Dunham, 2001).

In order to respond to clients in this environment, a different understanding of what it means to be a professional is required. However, Denning and Dunham (2001, p.22) conclude that "our traditions for understanding professions are rooted in the Industrial Age and do not adequately inform us about coping with the new realities of the Network Age".

In the current era, promise-keeping is identified as a new "third wave" (or Information Age, or Network Age) characteristic of the relationship between the IT professional and their customers (Denning & Dunham, 2001; Toffler, 1981). In this new, post-agricultural, post-industrial era, the customer is the driving force in business, not the producer. Professionals distinguish themselves by establishing value-generating relationships, with value defined by the customer. The role of the professional is to meet customer needs.

The observation made in the literature is that this is not how IT professionals currently understand their role. For example, many current software development models are "technology-centred", the process concentrating on fulfilling technical requirements more than on discerning and meeting customer needs.

> They emphasize a formal process beginning with a specification and ending with customer acceptance of a system meeting the specification. They usually iterate through several versions of the system, each reviewed by the customer. Despite years of experience with these models, many software projects are cancelled or late, many others leave their customers complaining "It does what I said but not what I want." And many systems have chronic flaws. (Denning & Dunham, 2001, p.23)

Denning and Dunham (2001, p.23) propose a new development model, which is "more attuned to customer value", working in close collaboration with the customer each step along the way. They say that currently the customer is not sufficiently present in developers' awareness, "We call our customers 'users' and sell them software without a warranty... We rigorously follow engineering development processes for systems, blaming the customer for bad specifications— which often we wrote" (Denning, 2003, p.19). The developer exercises control not only over the process of artefact development but also over the definition of the core characteristics of the technological world that artefact is part of. The user must find a way to fit into that world's pre-determined shape.

> Equal participation is not achievable unless users are able to participate on an equal footing in the construction of the objective world which is a substantially different activity from merely participating in the construction of the system based on the expert's objective world. (Adam, 1999, p.6)

The pursuit of professional practice which centralises the user calls for IT professionals who have a heightened awareness of their responsibility to serve and care for clients (Gotterbarn, 2004b). This requires a systematic orientation of IT professional practice towards the client.

2.2.2.2. Ethics and the primacy of the Other

In order to provide a foundation on which to base such an orientation, I propose we first look to general ethical philosophy. As signalled earlier, Western philosophical thinking may be arranged under the labels of duty-based ethics, consequence-based ethics and virtue ethics (Sidgwick, 1910; Tavani, 2004; Warburton, 2004).

The best known proponent of duty-based ethics is Immanuel Kant (1724-1804), who emphasised the motivation lying behind moral acts. From this perspective, for an action to be moral it needs to be motivated by a sense of duty, rather than out of an emotional response or in self interest. Control over such motivations resides in the will of the individual. Guidelines associated with this philosophy are: "Act only on maxims which you can at the same time will to be universal laws" and "Treat other people as ends in themselves, never as means to an end" (Warburton, 2004, pp.44-45).

The most widely known version of consequence-based ethics is utilitarianism, held, for example, by Jeremy Bentham (1748-1832) and John Stuart Mill (1806-1873). According to this way of thinking, the consequences of an action determine whether that action was moral. The goal of such reasoning is to produce the greatest happiness for the greatest number of people (or, in negative utilitarianism, the least amount of unhappiness). Thomas Hobbes (1588-1679) promoted a version of consequence-based ethics that has also been characterised as contract-based ethics. He asserts that, due to people's rightful natural tendency towards self-preservation, the only means of establishing mutually beneficial relationships is through individuals consenting to be bound by formal legislation.

Virtue ethics, which focuses on a person's character and their whole-of-life comportment, was presented by Plato (427-347 B.C.) and Aristotle (384-322 B.C.). In this view, a flourishing, or successful, life is achieved through pursuing virtues such as generosity,

courage, honesty and trustworthiness, which influence how a person acts in particular circumstances.

While concern for others may be evident across various streams of Western thought, other-centredness as a foundational ethical ideal is argued for most clearly by French philosopher Emmanuel Levinas (1906-1995), who has been signalled as challenging much of Western philosophy (Davis, 1996). From Levinas' perspective, Western philosophy has too often focussed on the ego, which is considered to be "the source and end of all that is" (Peperzak, 1993, p46). The appeal of his approach for this current study lies in the fact that he cuts across traditional ethical thought, thus offering new insights, and that he bases his argument on human experience, thus aligning with my experience-based approach to IT professional ethics. Others have also suggested that Levinas offers insights of use to computing (for example, Brigham & Introna, 2007).

Levinas (1979; 1981; 1998) begins with our general natural attitude to nurture and focus on ourselves. If we lived isolated in the world, we would generally have no reason to consider whether we needed to take an ethical stance or not. It is when others are introduced into our world that we are confronted with ethics. Our self-defined horizon of responsibility is breached by the presence of the Other, who stands in contradistinction to ourselves, or the Same (Peperzak, 1993). (In this description, "I" and "we" refer to the ego or self, which in Levinas' vocabulary are instances of the "Same". These terms contrast with "others" and "they", which are instances of the "Other".)

Levinas defines ethics in terms of responsibility to the Other. Our encounter with the Other calls such responsibility forth from us and engages us as ethical agents, and thus responsibility cannot be avoided. We cannot escape taking a stance towards others, for to ignore them is in itself a stance. "The Other makes me realize that I share the world, that it is not my unique possession, and I do not like this realization. My power and freedom are put into question" (Davis, 1996, p.48) and I am called to respond. Such response, even before engaging in reflective processes, involves the acknowledgement that the Other exists.

> For Levinas, dialogue begins with the ethical interruption of the other: there is no self outside the response to otherness, to the claims posed by the other. The encounter with the other, the "face of the other," the other who is "infinitely foreign," needs to be acknowledged before using reason or forming judgments about the other. (Deifelt, 2007, p.117)

Furthermore, according to Levinas, our place in relation to the Other is not one of an equal but of a servant, obligated (enslaved, even) by our responsibility towards the Other. We are not free to decide whether or not to respond in an ethical sense towards the Other, for as soon as the Other enters our world the world has changed irrevocably for us and we are faced with making a response. This interaction is a fundamental part of our existence, defining our existence. We face others and our lives are intrinsically bound up with them. Such a relation is not so much rational, as a responsiveness to the Other. We enter their world at the level of our existence and our lives become defined not just by who we are but by their presence. Nor is the basis of our ethical relation to the Other reciprocal - our response to the Other is our business and others' response to us is theirs. The recognition of the otherness of the Other makes prescriptive expectations of them on our part unethical. For the same reason, our response to the Other is not contingent on their response to us. An ethical response is purely my responsibility, chosen freely apart from any extrinsic motivation.

Additionally, from Levinas' point of view, the Other is never fully comprehensible to us. We can never make others part of ourselves or refine them to a point where they are reduced to ourselves. They are always bigger than our thoughts about them. We are thus dominated by the Other (whether we choose to acknowledge it or not). The demands on us in this relation are always more than we can meet, however nor can we ever avoid them.

Seen thus, ethics calls egoism into question and moral consciousness is seen not as "an experience of values, but an access to exterior being" (Critchley, 2002, p.150). Ethical intentionality is not an absorption of others into comprehension but "an exit from oneself" (Davis, 1996, p.21). Levinas' critique of much of Western philosophy is its attempt to reduce the Other to the Same. Philosophy has operated on the Other so that "otherness is transmuted into sameness by means of the philosopher's stone of the knowing ego" (Critchley, 2002, p.16).

> Thus, philosophy is an egology, asserting the primacy of the self, the Same, the subject or Being. The Other is acknowledged only in order to be suppressed or possessed... the characteristic gesture of philosophy is to acknowledge the Other in order to incorporate it within the expanding circles of the Same. (Davis, 1996, p.40)

Levinas' ethics does not lose the Other within the Same, or lose the Same within the Other – they each remain distinct, though in relation to each other. Ethics involves acknowledging the Other's otherness and not trying to remove this from our world.

For Levinas, ethics is something we do rather than something we understand. Ethics is our movement towards the Other we don't understand. Ethics is my response to the Other at a fundamental level, constituting the "deep structure" of my existence and is the Other within me "in spite of me, calling me to respond" (Critchley, 2002, p.21). Ethics, our relation with the Other, is a primary aspect of our existence, upon which all other aspects are built.

Such a view describes ethics in terms of our relation to others, rather than as a list of rules. Critchley (2002) suggests that this lays the kind of foundation upon which ethical rules can and must be built.

The Other of Levinas has been extended by some to an Other embracing all others, including the environment. Levinas himself seemed to somewhat allow this, so environmental ethics has been argued to be consistent with his philosophy (Hardy, 2002).

Ethics is thus understood to be a primary attribute of human life and defined in terms of our orientation to entities which are not ourselves. We are dealing in ethics with the fundamental building blocks of human existence.

The practical application of this understanding of ethics in professional practice is at the level of the professional's orientation. Such a view defines the frame of ethical professional practice, and offers insight into the conceptualisations required in order to establish and maintain such a frame.

2.2.2.3. Professional ethics and the pledge

With respect to professional ethics, Daryl Koehn (1994) argues that the only defensible ground for professional ethics, which serves as a legitimate reason for a client to trust a professional, is the professional's promise to provide certain services on the client's behalf. This promise is made implicitly, if not explicitly, when the professional accepts the role of a professional. Inherent in this role is a pledge to serve the client's good. The pledge guides the application of the professional's expert knowledge and underpins any formal contract that may be entered into. It alone provides the basis upon which a client may trust a professional to conduct themselves in that client's best interests.

Clients are vulnerable, since the basis of a professional-client relationship can be understood as a need on the part of the client which they cannot fill themselves. To meet this need they approach a professional who they expect will enable them to reach their

goals. For example, if a business needs to upgrade their software, they approach an IT professional expecting that the professional will help them decide on an appropriate solution and implement it. They also expect that the chosen application will meet their needs and enhance the running of their business. They also expect that they will not pay unreasonably for this application. All of these expectations are held, however, more or less in technical ignorance. Clients are in a position of having to trust the IT professional, not only with the choice of software and the expenditure to acquire it, but also with the installation and data conversion of sensitive business files. Trust lies at the heart of the professional-client relationship and the professional is expected to prove themselves trustworthy.

Such client trust may be based on the professional's expertise. The professional has training and experience which enables them to assist the client. This may seem to give the client reason to place their trust in the professional. However, the nature of expertise militates against trustworthiness by displacing the client so they are "no longer at the moral centre of the professional-client relation" (Koehn, 1994, p.23). Instead, other things assume priority: the expert's skill at their trade, the expert's concentration on their specialisation within the discipline, the expert's technical goal, the expert's definitions of the limits of their responsibility and the expert approaching the client as an individual dissociated from their wider community. In essence, the desires of the expert, not the client, are the focus of the expert's attention. As such, expertise does not present sufficient grounds for client trust.

Client trust may, alternatively, be based on a formal contractual agreement between themselves and the professional. The client thus assumes control over the professional's actions and can state explicitly what service they expect from the relationship. This may seem to give the client reason to trust the professional. However, the nature of contractual agreements works contrary to a relationship of trust by limiting the professional's responsibility to the stated requirements. The dynamics of the client-professional relationship are thus hampered: by removing the exercise of professional discretion, by presuming the client is competent to devise the contract, by removing client responsibility from the ensuing interaction, by making the payment of a fee the starting point of professional responsibility and by defining professional responsibility in terms of client desire. In essence, the desires of the client overwhelm professional judgement and

become the focus of the interaction. Therefore, contractual agreements do not present sufficient grounds for client trust.

If the two traditional principle bases for client trust, expertise and contractual agreements, are in fact insufficient grounds for such trust, what is? Trust in both expertise and contracts is, in fact, grounded on a prior condition. This condition is the public pledge of the professional to serve the client's good.

In order to establish and maintain client trust, a professional must demonstrate that the following prevail in their relationship:

1. the professional must aim at the client's good;
2. the professional must exhibit a willingness to act;
3. such willingness must be sustained;
4. the professional must be competent;
5. the professional must be able to expect co-operation from the client;
6. the professional must have the freedom to exercise their discretion; and
7. the professional must be bound to monitor their own behaviour.

(Koehn, 1994, p.54)

These rest on the pledge the professional made on taking up their profession, to serve their client's good.

> We can say... that the pledge grounds client trust by providing clients with a reason to expect and demand service from those occupying the roles of doctor, lawyer, or cleric. ... professionals' unilateral, unqualified pledge to serve a specific end of a particular group of vulnerable human beings grounds professionals' authority (Koehn, 1994, pp.64,68)

Trust as a basis for professional ethics is not unrecognised in the IT literature. Its presence in the general professional ethics literature is acknowledged as being relevant to the IT profession (Tavani, 2004).

> The fiduciary model presents the best ethical ideal for the professional - client relationship. It recognises the superior knowledge that professionals have and imposes special obligations on them in virtue of that superior knowledge; yet it permits clients to make the decisions that importantly affect their lives.... The fiduciary model's implication that professionals must be worthy of client trust provides a criterion for determining professionals' obligations to clients. (Bayles, 1989, p.100)

Fiduciary means having a trustee role, as standing in a special relationship of responsibility to someone whereby their interests are promoted.

This promotion of others' interests has been accepted elsewhere as central to IT professional ethics, even beyond a formal professional-client relationship. The public good, for example, takes a prominent place in the Software Engineering Code of Ethics and Professional Practice... "the Code explicitly identifies the public good to take priority over loyalty to the employer or profession... some of the few serious objections to the Code arose because of this strong position on the public good" (Gotterbarn & Miller, 2004, p.160).

The critical point is that professional ethics rests upon the professional's pledge to serve others.

2.2.2.4. Ethics and cultural relativity

With respect to commonly held cultural values, there is evidence that a core ethical value pervades the world's cultures.

In 1993, over 140 religious leaders representing a spectrum of faith traditions endorsed a draft *Declaration toward a Global Ethic* at the Parliament of World Religions. This was, then, an expression of ethical agreement across religions.

> In the declaration of a Global Ethic, the Parliament affirmed general beneficence, referring to the ubiquity of the Golden Rule. The Global Ethic renders this as its 'fundamental demand': 'Every human being must be treated humanely.' (Schweiker, 2004, p.489)

The Golden Rule referred to here is represented in the writings of a number of religions, including Baha'ism, Buddhism, Christianity, Confucianism, Hinduism, Islam, Jainism, Judaism and Zoroastrianism. It is expressed in the biblical statement from Matthew 7:12, "Do to others as you would have them do to you", which emphasises the important place of others in individual consciousness.

Similar sentiments were included in a 1981 Organization of African Unity Charter on Human and Peoples' Rights, in Article 27:

> The rights and freedoms of each individual shall be exercised with due regard to the rights of others, collective security, morality and common interest. (African (Banjul) Charter on Human and People's Rights, 1981)

Indeed, Nkulu (1997) remarks that "an attentive reading shows clearly that this article 27 is the key to the interpretation of all human rights defined in the African Charter." Thus, ethics from an African perspective takes others into account.

In my own Australian culture such an attitude is echoed in the ANZAC (Australia and New Zealand Army Corps) tradition which, in remembrance of the sacrifice of military personnel,

quotes another biblical ideal, “Greater love has no one than this - that he lay down his life for his friends” (John 15:13). The pinnacle of interpersonal relationship is expressed in self-giving for the sake of others.

The acceptance of this principle by a wide range of cultures indicates that despite accusations of religious and cultural diversity, and therefore relativism with respect to ethics, there appears to be a globally pervasive other-focussed foundation for ethics.

2.2.2.5. In conclusion

In other words, Denning and Durham observe the changing reality of professional practice in the current Information Age, Levinas lays a foundation on which to build ethical rules, Koehn illuminates the ground for ethics in the professions and the Parliament of World Religions professes a cross-cultural norm. Their focus on the customer, the Other, the client and humanity indicate the applicability of a professional adopting an other-centred attitude in a global environment. A checklist of requirements may still be necessary for formal membership in professional bodies, however an other-centred attitude is integral to a professional who wants to claim that they practise ethics.

> Ethical values... shape our behaviour and constrain us: they hold in check our self-interest since they require one to act with respect for others. (Spinello, 2001, p.145)

2.2.3. The implications for IT professional ethics: A Preliminary Model

It is now possible to build on the Model of Evolving IT (Figure 2.2) by adding a dimension of other-centredness. I suggest that there is a progression of thought outward in the preceding discussion. Denning and Dunham (2001) talk of the customer, Koehn (1994) of the client, and Levinas (1998) and The Parliament of World Religions (Schweiker, 2004) of humanity. These associations represent a movement steadily away from the practitioner and may be mapped along an outward-looking continuum, as seen represented in Figure 2.3. The outward-looking continuum is represented on an axis in the bottom right hand corner, indicating a third dimension. The additional layers, of the client and humanity, come out towards the viewer. This axis expounds the mediating role of practitioners. It is elaborated on in chapter 5.

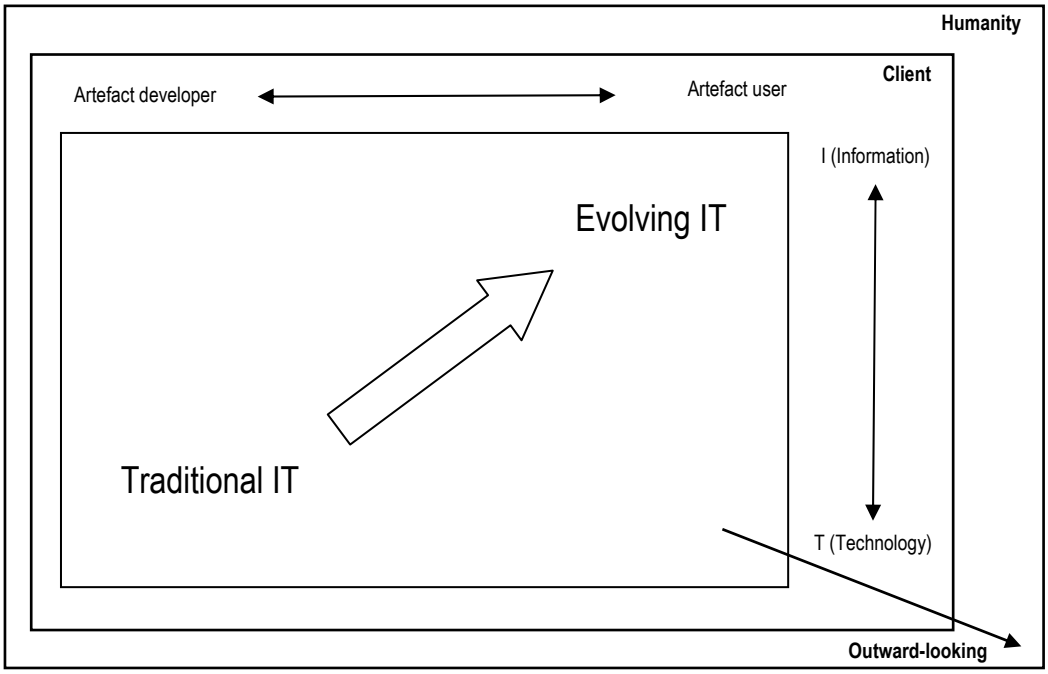

Figure 2.3 A Preliminary Model of Ethical IT

It would appear that the more outward-looking professionals become, the more able they are to claim that they are practising ethics.

2.2.4. Further research needed into IT professional ethics

All of the above is approached in the literature as a philosophical discourse. There does not seem to have been any empirical research in the IT field that investigates in depth contemporary approaches to IT professional ethics.

This present research builds on the philosophical base by adopting the IT professional's view. This investigation of IT professionals' experience of ethics offers insight into their world and a means of comparison with the traditional views frequently presented as the authoritative standard for IT professional ethics.

2.3. Experiencing IT professional ethics education

Having considered the experience of IT and the experience of IT professional ethics, we now turn to the experience of IT ethics education. While my approach to IT ethics education research is predominantly focussed on the tertiary education sector, this also offers insights of interest to the ongoing support of IT professionals.

As indicated in chapter 1, *education* is used here in a broad sense, of the support structures required to help professionals in their practice of ethics. These supports may take the form of in-service training seminars, regular team meetings, reference resources, practical experience and formal courses.

This is a review of previous research which leads to a proposal to adopt a relational approach to ethics education. Attention is given to the educational implications of the empirical findings of this current project in chapters 5 and 6.

2.3.1. How IT professional ethics education has been experienced to date

The IT ethics education literature presents very little direct discussion about educational theory, although it does reveal certain ways of approaching education.

The relevant research is represented here under two predominant ways of experiencing IT ethics education found in the literature – education as exercising behavioural control and education as influencing moral development.

2.3.1.1. IT ethics education as exercising behavioural control

One experience of IT ethics education is exercising behavioural control, whereby education aims to direct IT professionals' behaviour in response to ethical dilemmas. Codes of conduct figure prominently in this approach, providing the basis for educational activities. The goal of such research is to conform professionals' behaviour to institutional standards. The principle technique for doing this is the presentation and enforcement of organisational codes.

Emphasis is laid by some on the need to control employees, in order to protect organisations from harm such as "lawsuits, financial loss, and negative publicity" (Munro & Cohen, 2004, p.915). Although the concern may extend to the effect of IT on society in general, the educational aim is to "curb unethical behavior" (Cronan & Douglas, 2006, p.viii).

Codes of ethics are promoted as useful instruments for this purpose (Harris et al., 2001; Munro & Cohen, 2004). The functions served by codes include inspiration, education, guidance, accountability and enforcement.

It has been suggested that written codes may be useful to:

1. facilitate prompt action when an issue is complex;
2. help alleviate bias; and
3. guide those we do not trust to independently make a valid choice.

(Colnerud, 2006)

When focussing on education as exercising behavioural control, interest is shown in the influencers which will have the greatest effect on behaviour. The decision making research cited in the IT literature indicates influencers of ethical decision making being:

1. an individual's personal ethical structure;
2. dimensions specific to the situation; and
3. the environment in which the decision must be made.

The last of these is considered to be the most feasible for an organisation to control, through effective communication of the organisation's code of ethics and core values, reinforcement by management support and enforcement procedures (Harris et al., 2001).

Others indicate that ethical behaviour comes under a complex range of influencers, as illustrated in Figure 2.4. This model synthesises the scholarship concerning the effects on behaviour, including the Theory of Planned Behaviour (and its predecessor, the Theory of Reasoned Action) which are referred to in a number of IT ethics studies (for example, Banerjee et al., 1998; Jewels & Evans, 2005; Leonard et al., 2004; Munro & Cohen, 2004; Peace et al., 2003; Robbins, 2005). The model suggests that attitude influences intention which in turn influences behaviour. Some consider that attitude can be impacted, through making employees aware of the consequences of non-compliance. Therefore, a company "should emphasize the organization's ethical policies and the consequences of not following them" (Leonard et al., 2004, p.153). The object of such education is the content of ethical standards, embodied in codes of conduct.

However, the use of codes for ethical direction also comes under some criticism. The shortcomings of codes include:

1. Their inability to cover all possible scenarios. The changing scope of IT professionals' responsibilities, the new ways old knowledge is being applied and the convergence of technologies make it impossible to fully represent the present, let alone anticipate the future. Enduring principles are challenged by new

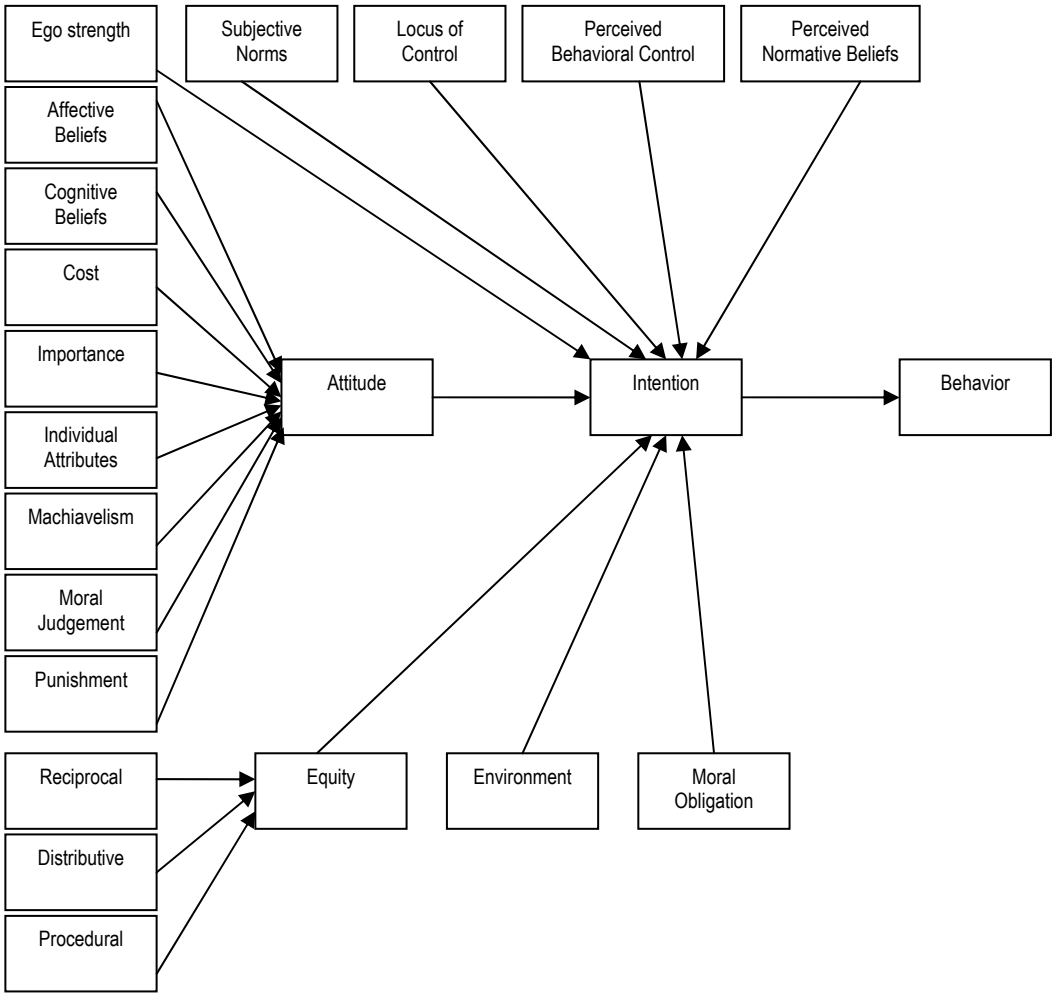

Figure 2.4 Cronan and Douglas' proposed general ethical behaviour model (Cronan & Douglas, 2006)

technologies and require interpretation in order to respond to the new tensions these innovations provoke. Codes have also been criticised for not providing a means of resolving conflicts when aspects of the code are in competition with each other.

2. Their engenderment of a checklist (minimalist) approach to ethical responsibility. Codes can be approached with a record-keeping attitude, whereby strict adherence to the code is seen as being synonymous with fulfilling ethical responsibilities. If the letter of the law has been kept, further ethical responsibility is either unperceived or considered to lie outside the professionals' role. Responsibility for defining ethical action is thus relegated to the impersonal organisation. This promotes an unreflective, legalistic, reactive, harm-avoiding approach to morality

and does not recognise any need for a thoughtful, empathising, proactive, good-promoting outlook.

3. Their dependence on ethical awareness to know when the code applies. If a professional is not aware that ethical questions could be raised in the situation they find themselves in, then they will not even consider what the code has to say to them about their actions. Even if they are aware of the codes' applicability to a situation, they have to want to apply it. The complexity of most situations means that a code will not provide a direct solution but will require a certain amount of interpretation, calling on the professional's contribution. Foundational attitudes, such as those employed when interpreting ethical situations, are the very ones that cannot be legislated.

4. Their misuse to legitimise the profession itself and thus protect the professionals rather than the clients. A professional society wanting to seem to conform to expected standards may develop a code for publicity purposes, however have no intention of enforcing it. A code may be formulated to limit professional's responsibilities rather than expound on them and thus be an instrument for protecting the professional rather than their clients.

5. The difficulty of detecting non-compliance and enforcing compliance to the code. Some codes are written in such a way as to make it difficult to know to what extent they have been breached. Even if such a decision is possible, the ability of professional bodies to enforce the code is limited. Once written, codes tend to not be referred to in a systematic way and so they exert limited influence over daily practice. Particularly in IT, the number of practitioners who are members of a professional body are in the minority, so these bodies are seen to have limited control over the field.

(Bynum & Rogerson, 2004; Coady & Bloch, 1996; Grodzinsky, 2000; Harrington, 1996; Tavani, 2004; Taylor & Moynihan, 2002; Volkman, 2004)

Even when the limitation of codes is recognised and the need for moral deliberation on the part of the professional is emphasised, codes may be considered to provide the expected standard, indicating for example "the obligations of software professionals" (Gotterbarn & Miller, 2004, p.157). These obligations, however, typically set an unsatisfactorily low standard for those who see ethics as requiring more than merely the fulfilment of duty and

observation of a *do no harm* dictum. In contrast, they see professional ethics as demanding the actual prevention of harm and encompassing a *duty to assist* (Grodzinsky & Tavani, 2002).

From this perspective, desirable IT ethics is the application of internalised standards (in contrast to the application of external rules), such as "responsibility and integrity", whereby the IT professional uses their "special knowledge and skills for the advancement of human welfare" (Greening, Kay, & Kummerfeld, 2004; Munro & Cohen, 2004, p.916). IT professionals are thus exhorted to commit to more than "due care" and embrace a "higher degree of care", going beyond the avoidance of harm to the pursuit of the "ethically commendable" (Gotterbarn, 2004a).

> The attitude of 'let the buyer beware' is neither the attitude of the physician nor of the civil engineer, nor should it be the attitude of the computing professional (Gotterbarn, 1991).

With respect to approaching education as exercising behavioural control, concerns have been raised about unhealthily influencing others' behaviour to the point of indoctrinating them into uncritical compliance (Maner, 2004; Vartiainen, 2005b).

2.3.1.2. IT ethics education as influencing moral development

Another experience of IT ethics education is influencing moral development, whereby education aims to deepen professionals' ethical maturity. The goal is either to develop a critical frame of mind or instil a sense of responsibility.

2.3.1.2.1 Developing a critical frame of mind

Those interested in moral development often draw on Leonard Kohlberg's stages of moral development (Kohlberg, 1981). Indeed, Kohlberg's stages have exerted considerable influence on research into IT ethics education. He proposed six stages of development which progressively concentrated on:

1. Avoidance of punishment;
2. Seeking reward or benefit;
3. Avoidance of others' disapproval;
4. Avoidance of dishonour;
5. Respect for people; and
6. Desire to not violate personal principles.

(Kohlberg, 1981, pp.121-122)

Kohlberg's emphasis is on rational thinking and justice. The highest stage esteems an intellectual, critical approach to norms. People are seen to be independent and logical, and morality is ultimately to do with the formation of universal principles from which conclusions about ethical behaviour may be drawn.

Thus, ethical education is associated with rational, step-wise processes. The position advocated is to concentrate on the process rather than the products of ethical reflection (Maner, 2004). The object of such education is the means of coming to an ethical decision.

Despite widespread employment of Kohlberg's model, not everyone is convinced of its validity. Gilligan (1982), for example, has argued for a care orientation which contrasts with Kohlberg's justice orientation. She asserts that Kohlberg's stages do not represent many people's moral development and proposes the alternative developmental stages:

1. Exclusive self-concern;
2. Questioning of self-concern as a sole criterion; and
3. Balanced self-and-other concern.

The justice versus care approaches contrast respectively in their emphasis on the rational versus relational, impartial versus contextual, and reasoned versus enacted (Tronto, 1993), and thus point to fundamental differences in approaching ethics.

Another criticism of Kohlberg's approach is that it presumes that people take decisions in an aloof, rational way. Additional suggested influencers of decision making are emotional responses to the situation and personal value systems which direct the deliberative process (Wardekker, 2004).

Kohlberg is also criticised for his apparent bias towards Western cultural ideals (though he reports testing the stages across cultures and finding them consistent). Chinese philosophy, for example, emphasises the subordination of individual rights under group rights and opposes the idea that there are universal norms which are applicable in all circumstances (Snell, 1996). There are at least three forms of moral reasoning that differ from the Western approach: Code 1. Welfare, rights and justice; Code 2. Duty, hierarchy and interdependency; and Code 3. Protecting the spiritual self (Langford, 1995, p.216). Since IT is global in nature, these differences need to be acknowledged and ethical foundations sought which apply across cultural boundaries (Grodzinsky, 1999).

> The global character of cyberspace makes it possible to affect the lives of people in places very distant from the acting subject's location… Therefore, the ethical rules for such actions cannot be rooted in a particular local culture... (Gorniak-Kocikowska, 2004, p.325)

Because of this, IT professionals need to appreciate the impact of IT in developing countries, have an understanding of international markets and law, and develop an ability to solve international communications problems (Marchant, 2004). This calls for significant change, as cultural biases currently embedded in IT exclude and de-legitimise non-Cartesian, holistic and relational approaches to knowledge, such as are important in Asian cultures.

> The Western high content/low context preference... is consistent with a prevailing Cartesian dualism, one that minimises the role of body in knowing and communicating, while maximising reason and rational discourse as a locus for knowledge and communication both separate from and superior to body. By contrast, Japanese emphasis on high context/low content communication -- shared by other Asian and traditional cultures -- is consistent with a nondualistic, non-Cartesian sense of self. (Ess, 2002, p.238).

In the light of this diversity, the goal of ethical deliberation and education, rather than being homogeneity, would better be understood in terms of communication which preserves local culture. This requires not just a critical approach to ethical dilemmas but also sensitivity to others.

2.3.1.2.2 Developing ethical sensitivity

Building on Kohlberg's stages of development and responding to some extent to its critics, the Defining Issues Test (DIT) was developed as a synthesis of a variety of models (Rest, Narvaez, Bebeau, & Thoma, 1999). Based on quantitative measurement, in contrast to Kohlberg's qualitative measures, it also made data collection and analysis simpler. The DIT has been employed in a number of IT ethics studies (for example, Paradice & Dejoie, 1991; Staehr & Byrne, 2003; Woodward, Davis, & Hodis, 2007). According to this test, four aspects determine ethical behaviour:

1. Moral sensitivity - ethical awareness of an issue existing which requires a moral response;
2. Judgement - Kohlberg's stages of development;
3. Motivation - reconciling conflicts between moral demands and personal goals; and
4. Character - a willingness to pursue moral behaviour despite difficulties.

(Rest et al., 1999)

This schema is promoted as offering a comprehensive approach to ethics. It claims to allow, for example, for tacit knowledge more than Kohlberg's original research and includes personal engagement.

Others emphasise the need for teachers to see students as whole human beings, not just people with "strategic and functional skills" (Goodpaster, 1996, p.442), in which case they will seek to influence them at the level of their values and ideals, not just at the level of their functional abilities. Only by attending holistically to the professional will ethics become integrated in a coherent way into their lives. In current organisational settings, however, many personal traits associated with ethical conduct (for example, compassion, generosity and idealism) are suppressed rather than encouraged (Goodpaster, 1996).

Integral to a more sophisticated conceptualisation of IT professionals as learners and the formation they require is an understanding of how they approach professional practice. Typically, professionals who exercise their profession with expertise do not resort to step-wise procedures or rationalisations. Novel circumstances may require recourse to analysis, however it is not the normal way experts operate (Erault, 1994). Experts are more likely to make an intuitional choice, based on their accumulated experience. Indeed, such ethical choices may lead to actions that step outside the norms of the profession and which call into question unhelpful rules. Early career professionals may not have yet accumulated the required experience, however forcing seasoned professionals back into a rational, distanced process of decision making may well risk forcing them to regress, not progress, in their mastery of the profession. Although step-wise approaches to ethical decision making emphasise rational deliberation, "there is no evidence that intuitive ethical expertise can be replaced by rational principles" (Dreyfus & Dreyfus, 1990, p.258).

The development of a core disposition of responsibility is thus recognised as integral to professional ethics formation. This is expressed as ethical sensitivity (Grodzinsky, 1999), a readiness to engage in moral deliberation (Tavani, 2004), having a moral horizon (Grodzinsky, 2000) and a commitment to moral action (Coady & Bloch, 1996). Thus, "good ethical judgement" forms the basis for ethical analysis and constitutes the core need of IT professionals (Bynum, 2004). This is ultimately gained through experience, however heuristic methods of analysis (based on pattern recognition more than formal logic) are suggested aids to the process, for example developed through case analysis.

Since a "moral point of view" (Spinello, 2001, p.145) is required as a consistent attitude, it is recommended that ethical education be directed towards the development of ethical responsibility. The law, the market, social norms and codes all exert an influence on behaviour, however a consistent regard for others is considered to be its most reliable regulator.

> There are clear benefits to a greater dependence on reflective morality than on an unreflective obedience to law, a misguided faith in the turbulent marketplace, an adherence to social norms based on peer pressure, or the untrammelled use of code. (Spinello, 2001, p.150)

Following this line of thought, software developers are exhorted to take a techno-*socio*-economic view rather than just a techno-economic view, with "an ethically sensitive horizon" defining their "scope of consideration" (Rogerson, 2004, p.126). Such an attitude would broaden the professional's responsibility beyond those directly involved in a system's development, to all those who are likely to be impacted by it. It is suggested that without such a broad scoping of responsibility, all of the relevant ethical issues are unlikely to be addressed (Rogerson, 2002). Such a stance needs to be taken from the very beginning of the development process.

The proposed goal of ethical formation is, then, the development of "ethical intuition" which perceives both that an ethical problem exists and whether a proposed solution is adequate (Bynum, 2004, p.60).

Such an approach envisages an IT profession which commits beyond the avoidance of harm to a "concern to maximize the positive effects for those affected by computing artefacts" (Gotterbarn, 2004a, p.116). This additional layer of responsibility is understood to be a key aspect of moving from a practitioner to a professional.

2.3.1.3. A hierarchy of insights

These approaches to IT ethics education seem to represent increasingly powerful approaches to ethics education. *Exercising behavioural control* focuses on the standards for ethical practice and aims at producing compliant professionals. *Influencing moral development - developing a critical frame of mind* focuses on the method of ethical deliberation and aims at producing reflective professionals. *Influencing moral development – developing ethical sensitivity* focuses on the necessary attitude for ethical responsibility and aims at producing engaged professionals. Each of these builds on the former and enhances it.

Their emphasis on content, process and motivation focuses on different aspects of the experience of the phenomenon of professional ethical practice. It would seem that a comprehensive educational approach would encompass all of these.

2.3.2. An alternative experience of IT professional ethics education

Attention is drawn in the IT literature to questions concerning the quality of learning achieved in the ethics curriculum. The difference between *deep* and *shallow* learning is highlighted, the key lying in the extent to which students engage personally with the course content. Shallow learning may be evidenced equally by the student distancing themselves from personal ethical engagement and by the student adopting an uncontested self-defining approach to ethics.

> One danger for students who adopt a "shallow" approach to ethics education is that they risk disowning the content by externalising it and, for example, equating it with law... a "shallow" approach to learning might equally result in a reduction of the content to a matter of opinion, a state of solipsism in which ethical dilemmas are completely addressed by internal dialogue. (Greening et al., 2004, p.93)

Consideration therefore needs to be given to "valued learning" in the context of ethics education. Such learning will focus on those aspects of the object of learning (in is case, professional ethics) which are qualitatively and critically different.

Seen this way, instruction needs to be more than the teaching of rules, the presentation of simple scenarios and reactions to dilemmas. Each of these result in a particular (unhelpful) way of viewing IT ethics, including externalising ethics, equating being legal with being ethical, over-simplifying solutions and failing to take a proactive stance towards ethics. In order for professionals to take ethics seriously and be equipped to practice ethics in more than superficial ways, they need to be engaged at a personal level. A greater emphasis therefore needs to be made in IT ethics education on deep learning, the authenticity of learning tasks and lifelong learning (Greening et al., 2004).

A deep approach to learning does not allow the learners to avoid the question of having to change their conceptions of the phenomena being presented (Ramsden, 1988). Such engagement with the course content cannot be achieved through simple instruction – the learner has to interact with the content on an experiential level.

> ... teaching methods that enable students to work on discrepancies in a supportive environment - one that permits incorrect thoughts to be retraced and remedied - are likely to be appropriate. Simply telling students the 'right' conception cannot work, because change involves an active working upon and interaction between the old way of thinking

> and the new; there is a real sense in which new conceptions grow from older ones. Change in conceptions requires teachers to arrange situations where students must confront the discrepancies between their present way of thinking about the subject matter and the new way desired by the teacher, and where students can come to realize the personal value of the new way. This realization may take a very long time to mature. Time for contemplation, reflection, working things out, and discussion with others learning the same subject matter is thus not a luxury, but a necessity. (Ramsden, 1988, pp.21-22)

The central role of reflection and communication needs to be recognised and incorporated into the learning experience. This is a relational, not just cognitive or behavioural, approach to learning. It may be summarised in the following key features (Ramsden, 1988, pp.26-28), with their suggested application to ethics formation:

1. Learning is about changes in conceptions – a fundamental change of engagement with ethics is more important than knowing philosophical schema, decision making techniques or arguments surrounding a specific issue;
2. Learning always has content as well as a process – engagement with actual ethics scenarios is more productive educationally than addressing process questions without attention to the ethical content as well;
3. Improving learning is about relations between learners and subject matter, not teaching methods and student characteristics – the personal engagement of learners with ethics is more important than how the content is conveyed or what learning styles are represented; and
4. Improving learning is about understanding the student's perspective – the learner's existing engagement with ethics is the starting point from which instruction may proceed.

This approach highlights the difference between knowing intellectually and effective learning. The goal of teaching thus changes from the transmission of facts to the stimulation of personal engagement with the phenomenon. It recognises the IT professional as an integrated human being, rather than simply a physical, mental or emotional entity. It privileges the professional's viewpoint as the foundation for ethical instruction.

2.3.3. The implications for IT professional ethics education

What I propose here, then, is an approach to IT professional ethics education that focuses on the relationship of the practitioner to ethics, bringing about experiential change. When a practitioner experiences themselves as being an ethical professional as portrayed in

section 2.2.2, they will see themselves and their world differently and I propose that this will affect their practice. This is a relational (or constitutional) approach to education. This approach draws on existing educational research, its newness here is in terms of the fact that it does not seem to have been pursued in depth in the literature concerning IT ethics education to date.

The way this approach differs from the alternatives reviewed earlier is summarised in Table 2.1. When ethics education is approached as *Exercising behavioural control*, the educational focus is on standards (for example, codes of ethics), the educational intention is to produce conformity (for example, according to organisational expectations) and the educational act is presentation (for example, external standards which must be known).

When ethics education is approached as *Influencing moral development – critical skills*, the educational focus is on problem-solving (for example, methods of decision making), the educational intention is to produce reflective thought (for example, critical thinking) and the educational act is enquiry (for example, posing questions rather than answering them).

When ethics education is approached as *Influencing moral development – sensitivity*, the educational focus is on attitude (for example, from a psychological perspective), the educational intention is to produce engagement (for example, personal moral sensitivity) and the educational act is heuristics (for example, exposure to many cases in order to recognise patterns).

In contrast, when ethics education is approached as *Pursuing a new experience of ethics:*

1. *The Focus* on the *experience of ethics* recognises the need for the practitioner to grow in their relationship with ethics before they will engage with others ethically. For example, they may need to change from an experience of professionalism bounded by a traditional view of IT which admits little room for consideration of the information user.

Table 2.1 Comparison of approaches to IT professional ethics education

Educational approach	Focus	Intention	Act
Exercising behavioural control	Standards	Conformity	Presentation
Influencing moral development-critical skills	Problem-solving	Reflective thought	Enquiry
Influencing moral development-sensitivity	Attitude	Engagement	Heuristics
Pursuing a new experience of ethics	Experience of ethics	Changed experience	Challenge experience

2. The *Intention* of a *changed experience* recognises the need for education to focus on experience as the basic unit of its engagement. For example, practitioners may be more effectively influenced through reflecting on their approach to the information user rather than learning lists of regulations.

3. The *Act* of *challenging experience* recognises the need to promote a change in the practitioner's existing experience. For example, stimulating practitioners to extend their experience beyond that which they currently take for granted.

This alternative approach proposes that the most important goal of ethics education is a change of relationship with ethics, out of which ethical behaviour may flow.

This approach is built upon the material presented earlier in this chapter concerning the nature of IT and IT professional ethics. It is also the consequence of views expressed in the next chapter of this account concerning the nature of experience and the nature of learning.

A rationale for the experiential learning of ethics has also been based on the concept of *stage disparity* (identified by Kohlberg and Rest) which makes use of contrast to prompt moral growth (Vartiainen, 2005b). Confrontation with this experience is prompted by solving dilemmas through discussion with others. This provides fertile ground for differences of opinion, exposing the participants to alternative viewpoints. An academia and industry collaborative learning environment provides the range of experience required to provoke this kind of interaction. Self-criticism and evaluation are used to encourage ethical growth.

> The framework broadens the traditional idea of learning professional ethics in an educational institute with hypothetical moral conflicts to a form of experiential learning in which IT professionals together with students critically deliberate about moral conflicts they have confronted in real life… clients, students, and instructors may be perceived as co-learners of professional ethics. (Vartiainen, 2005b, p.10)

This approach looks beyond the individual to a kind of community of practice, engaging the IT community in the process of ethical development. It also promotes experiential learning in real contexts.

Teaching methods are suggested, reflecting the four aspects of Rest's model, including: moral argumentation and dilemma discussion (for moral sensitivity and judgement); role models and heroes (for moral motivation and character); values clarification (to avoid indoctrination); and logic, role taking and concept construction (for principled moral reasoning). These methods induce change by presenting individuals the opportunity to

discover inconsistencies in their own thinking, with a view to prompting them to make up their own minds and not accept uncritically what is being presented to them (Vartiainen, 2005a). A project course is an example of an environment which satisfies the requirements of those who strive to avoid indoctrination, with experienced practitioners relied on to offer a perspective which aligns with professional standards (Vartiainen, 2005b).

I comment further on the practical outworking of a relational approach to learning ethics in chapters 5 and 6.

2.3.4. Further research needed into IT professional ethics education

The empirical research which has contributed to the preceding discussion represents a range of interests.

Some research surrounds the use of education as a means of influencing behaviour, including:

- Surveying the literature for decision making models (Cronan & Douglas, 2006);
- Evaluating influencers of decision making amongst students (Haines & Leonard, 2007a, 2007b);
- Testing behavioural control models with students (Banerjee et al., 1998; Leonard et al., 2004);
- Exploring the effectiveness of codes in influencing behaviour amongst practitioners (Munro & Cohen, 2004); and
- Examining the use of web sites to communicate codes of ethics (Harris et al., 2001).

Other research surrounds the use of education to influence ethical reasoning and development, including:

- Measuring the alignment between ethical reasoning and ethical decision making in students (Woodward et al., 2007);
- Detecting the criteria used by practitioners in making ethical decisions (Pearson et al., 1997); and
- Identifying factors that influence moral development in practitioners (Heron, 2007).

Table 2.2 Overview of IT ethics research methodologies

Study	Participants		Method	
	Professionals	Students	Quantitative	Qualitative
(Banerjee, Cronan, & Jones, 1998)	x		x	
(Cappel & Windsor, 1998)	x	x	x	
(T. S. Ellis & Griffith, 2001)		x	x	
(Haines & Leonard, 2007a)		x	x	
(Haines & Leonard, 2007b)		x	x	
(Heron, 2007)	x		x	
(Kreie & Cronan, 1998)		x	x	
(Leonard, Cronan, & Kreie, 2004)		x	x	
(Morris, Jones, & Rubinsztein, 1993)		x	x	
(Munro & Cohen, 2004)	x		x	
(Paradice & Dejoie, 1991)		x	x	
(Pearson, Crosby, & Shim, 1997)	x		x	
(Prior, Rogerson, & Fairweather, 2002)	x		x	
(Robbins, 2005)		x	x	x
(Staehr & Byrne, 2003)		x	x	
(Vartiainen, 2005a)	x	x		x
(Woodcock & Armstrong, 1999)		x	x	

The behavioural control focus on external standards is prone to a cognitivist view of learning, whereby learning is understood as the learner aligning with an external reality. The moral development focus on problem-solving or attitude is prone to a constructivist view of learning, whereby learning is understood as the learner constructing meaning. Little research has been conducted in IT professional ethics education from a constitutionalist point of view of knowledge, whereby learning is understood as a change in relation between a subject (the learner) and an object (the focus of their learning). The current study seeks to help fill this gap.

Other studies focus on educational courses and support systems, including:

- Evaluating an Australian university course (Staehr & Byrne, 2003);
- Determining the role of ethics instruction in shaping Australian students' ethical reasoning (Woodcock & Armstrong, 1999); and
- Designing and testing a software decision aid with students (Robbins, 2005).

This current study contributes insights which it is anticipated will be of use in these contexts.

Some research compares population subgroups, including:

- Exploring the difference between male and female students' attitudes (Kreie & Cronan, 1998);
- Examining the difference between MIS and other business students' decision making (Paradice & Dejoie, 1991); and
- Researching the difference between North American and South African students' attitudes (Morris et al., 1993).

I do not seek to compare subgroups in the current study.

In the next chapter, I argue for the need for rich data collection methods when researching ethics. Despite this need, the majority of studies into IT ethics have used surveys to collect the data, requiring responses on Likert scales, and have been analysed using a quantitative methodology. They also often call on students as participants (see Table 2.2). This current project seeks to help fill the need for rich data collection through a qualitative study of practitioner's experience.

2.4. Conclusion

In this chapter I have considered previous research related to this investigation into the experience of IT, IT professional ethics and IT professional ethics education.

I argue for a change of approach to IT, from a technology developer focus to an information user focus. This reflects the changing IT landscape and is represented in a new *Model of Evolving IT* (Figure 2.2).

I argue for a change of approach to IT professional ethics, from an actor-centred focus to an other-centred focus. This reflects a movement away from a professional-centric view and is represented in a new *Preliminary Model of Ethical IT* (Figure 2.3).

I argue for a change of approach to IT professional ethics education, from a cognitivist or constructivist focus to a constitutionalist focus. This reflects a goal of deep learning and is represented in Table 2.1.

Table 2.3 Summary of approaches supported in this thesis

Area of investigation	Alternative experiences	Supported experience
IT	Technology developer-oriented	Information user-oriented
IT professional ethics	Practitioner-centric	Other-centric
IT professional ethics education	Cognitivist/constructivist	Constitutionalist

The foci outlined above which are supported in this thesis, and their key differences with alternative approaches, are summarised in Table 2.3. Thus, a conceptual framework is developing through which I may address the sub-questions of this project, concerning the experience of IT, IT professional ethics and IT ethics education.

The next chapter presents the method I have chosen to help investigate and progress these ideas.

Chapter 3. Choosing a method to study IT professionals' experience of ethics

This chapter discusses the selection of an appropriate method for this current study. It describes the underlying philosophy and practical implementation of the method.

The key question of this project is: How may we help facilitate IT professionals' practice of ethics, from an experience-based perspective? The approach favoured here is to answer this question from the viewpoint of IT professionals facing complex work situations. It will be argued that this is a strong position to start from when planning educational experiences concerning IT professional ethics. What was required, therefore, was a method which would enable faithful elicitation of professionals' lived experience, its representation in a useful form and its meaningful application to an educational setting.

3.1. What kind of method is appropriate?

3.1.1. Introduction

Ethical practice is a complex activity, made difficult by the perceived existence of "grey" areas and myriad possible ethical models to follow. It seems that few ethical decisions in today's multifaceted society present themselves straightforwardly, whereby everyone would agree on the acceptable course of action. Moreover, a clear definition of ethics is problematical because of an apparent lack of consensus on the nature of ethical behaviour (Randall & Gibson, 1990). Furthermore, the complexity of IT ethics increases, as IT innovations grow at an exponential rate, for example blurring the differentiation between the human and the machine, and converging previously distinct technologies. Professionalism introduces additional complications with respect to boundary issues and loyalty concerns.

3.1.2. A complex phenomenon

These multiple complications of lack of consensus, rapid technological evolution and conflicting demands present themselves on a united front to IT professionals facing ethical practice. Since the goal of this research is to describe such a group's experience of ethics,

the potential for a complex range of responses is high. The likelihood of such complexity indicates what methodology is most suitable for this study. An abstract and complex phenomenon is appropriately studied using a methodology which can capture its richness (Flory, Phillips, Reidenbach, & Robin, 1992; Trauth, 2001). A systematic attempt to understand such an environment requires a methodology which combines rigor with flexibility, a thorough approach with the ability to cater for breadth, and defensibility with a focus on socially-oriented objectives.

For a study of ethics I sought a method which enabled the exploration of personal perspectives. Furthermore, I needed a means of assimilating that information to make sense of it and represent it, so a wide audience may understand and make use of it. To realize the educational aspirations of this project, I also needed to understand how to apply such insight to promote professional growth.

3.1.3. Choosing phenomenography

In order to capture the richness of ethical experience, a qualitative method is indicated (Adam, 2000). The qualitative approach *phenomenography* is a research tool which helps meet the goals indicated above. Phenomenography's allied educational approach, *variation theory*, builds on variation in a group's experience and it is this aspect which phenomenography examines. The phenomenographic research method was thus chosen as an effective means of gaining useful insight into the complex field of IT professionals' experience of ethics.

The case study approach, though enabling in-depth research, seemed too narrow in its scope. Case studies focus on a limited range of circumstances and it seemed important to be more representative of the wider discipline. The grounded theory approach would have enabled a development of theory out of lived experience. However, it did not contribute to the project's educational aims as clearly as phenomenography.

Phenomenography adopts experience as the object of research. It focuses on the experiences of the research participants and not those of the researcher. It typically identifies a hierarchy of more or less complex or powerful experiences and describes critical differences between these experiences. It also provides a means of applying these insights in educational contexts.

> At the root of phenomenography lies an interest in describing the phenomena in the world as others see them, and in revealing and describing the variation therein, especially in an

> educational context... This implies an interest in the variation and change in capabilities for experiencing the world... Some capabilities can, from a point of view adopted in each case, be seen as more advanced, more complex, or more powerful than other capabilities. Differences between them are educationally critical differences, and changes between them we consider to be the most important kind of learning. (Marton & Booth, 1997, p.111)

These aspects of phenomenography are elaborated on in this chapter.

Phenomenography has recently attracted the attention of computer systems researchers, with predominant application to educational settings. It has been implemented to investigate variation in students' perspectives, for example, to study learning and international collaboration in a computer systems course (Berglund, 2005), the experience of undergraduate learning about information systems (Cope, 2000), students' experiences of learning to program (Bruce, Buckingham et al., 2004; Eckerdal, Thuné, & Berglund, 2005; Stoodley, Christie, & Bruce, 2004) and first year students' conceptions of programming (Eckerdal & Thuné, 2005).

Phenomenography has been used to investigate variation in teachers' perspectives, for example to study the ways computing academics understand teaching (Lister, 2007), the variation in teachers' intent behind data structure teaching (Lister, Box, Morrison, Tenenberg, & Westbrook, 2004), computing academics' conceptions of UNIX (Doyle & Lister, 2007) and computer science teachers' views of student success (Kinnunen, McCartney, Murphy, & Thomas, 2007).

Phenomenography has been used to investigate variation in the experience of information technology researchers (Bruce, Pham, & Stoodley, 2004; Pham et al., 2005).

Phenomenography has been used to investigate IT ethics, for example to study students' attitudes to computer use (Vartiainen, 2001) and the perceptions of students, clients and instructors in a project course (Vartiainen, 2005a).

The method has been widely used in educational research (Booth, 1992; Cope, 2000; Marton & Tsui, 2004) and has been employed in association with variation theory to gain insight into the learning experience (Berglund, 2005; Edwards, 2006; Marton & Booth, 1997).

Given the features of the method, and its past application to computer science, ethics and education, it seemed an appropriate choice for this current project.

3.1.4. Differences with phenomenology

There can be some confusion between phenomenography and phenomenology, so it seems important to include a comparison of these approaches. Phenomenology, like phenomenography, concerns itself with experience. Both also aim to describe experience without examining its cause or function. Indeed, phenomenography has drawn on the vocabulary of phenomenology in order to label some aspects of experience. However, despite these similarities, fundamental differences in objective distinguish them from each other.

Phenomenology seeks to represent what is common in people's experience. Its understanding of the essence of experience is that which is common to all people studied. Phenomenography, in contrast, seeks to represent variation in people's experience (Larsson, 1986).

Phenomenology also aims to represent the phenomenon in a complete, concrete way. It "stands opposed to all forms of explanation that draw attention away from the manner of the appearance of the phenomena in question" (Moran, 2002, p.2). Phenomenography, in contrast, aims to represent only the critical aspects of experience that are relevant to the aim of the particular project at hand.

Phenomenology represents the participants' perspective in its rawest form. "What is sought by... phenomenology is a rigorous description of human life as it is lived and reflected upon in all of its first-person concreteness, urgency, and ambiguity" (Pollio, Henley, & Thompson, 1997, p.5). Phenomenography, in contrast, interprets the participants' experience in the light of other participants' experiences and represents the stripped-down, essential elements of their experience which reveal the nature of their interaction with the world.

3.2. What is phenomenography?

Phenomenography is characterised by the description of conceptions (Svensson, 1997). This statement requires some explanation.

Conception is understood in an experiential, non-dualistic, relational sense. Conceptualising is not just a mental activity but one in which the perceiver of a phenomenon relates to the phenomenon out of the context of their whole experience, the phenomenon contributing also to that relationship through its own unique characteristics.

The focus of a phenomenographic investigation is therefore not the subject which is experiencing or the object being experienced but the relationship between them. This relationship may be analysed in terms of a particular structure which is descriptive of all experience.

Description is understood to be both observational and interpretive. The description attempts to convey conceptions as the participants of the study see them, so that only the views of the participants are represented in the description. In this way the description is observational. The description also organises individual participants' views in the light of other participants' views and so presents the collective experience of the group under investigation. It thus represents the participants' views in ways they themselves, immersed in their own experience, may not be able to see them. This organisation of their views is conducted in the light of the researcher's perspective. In this way, the description is also interpretive (Marton & Booth, 1997; Sandberg, 2000).

Thus, a phenomenographic analysis arrives at a descriptive interpretation of the way a specific group relates to a particular phenomenon, following a particular understanding of the structure of experience. These concepts are expounded further in the following sections.

3.2.1. Variation as the goal

A central goal of phenomenography is to elicit and represent variation (Marton & Booth, 1997). This research approach is thus helpful for giving insight into the range of possibilities rather than the more restricted majority view. It aims to describe the various ways a particular phenomenon is experienced, representing the breadth of experience of a particular group and in this way opening a window into that community's world. To this end, outlying experiences, which would be eliminated in research methods focusing on what is common, are sought after and included.

However, such variation is also assessed for its contribution to the description of the phenomenon. As such, only critical variation is included, that is variation critical for the systematic description of the experience of the phenomenon under investigation. The criterion for inclusion is that the proposed addition contributes qualitatively to our understanding by making the description more complete or by illuminating the phenomenon's uniqueness in comparison to other phenomena.

In representing the experience of a group, phenomenography provides a means of identifying variation in the way a community experiences a phenomenon. This variation may be between individuals but also within individuals, that is individuals may differ in their experience of a phenomenon but an individual may also experience a phenomenon in different ways. Such variation proves useful in an educational context, by indicating the kinds of differences that are significant for the group under instruction.

This variation of experience is defined by a combination of:

1. the meaning assigned to those experiences;
2. the structure of their constituent parts; and
3. their relationship with other experiences.

Thus, critical variation contributes to the formulation of these aspects of a phenomenographic description. A phenomenographic description, then, depicts the range of critically different ways a particular community experiences a specific phenomenon in terms of its meaning, structure and interrelationships.

3.2.2. Experiencing phenomena

In phenomenography, several terms are used interchangeably to denote the experience of a phenomenon – conceptions, ways of seeing, ways of understanding – all approach experience in a distinct way, different from, for example, the point of view of cognitive psychology. In phenomenography, experience is not about mental functions, but about how the world appears to people.

An example of the nature of our experience of phenomena is perceiving a wild animal in its natural setting (acknowledgements to Marton & Booth, 1997, p.86), for example a snake in the Australian bush. The snake may be partly obscured as it slithers through the undergrowth but, given enough information (a glistening eye here, the curve of its scaly body there, its tapering tail elsewhere), we would be able to discern its shape and distinguish it from the grass, fallen branches and other phenomena surrounding it. We also need to be able to "put the puzzle together" by knowing how the individual parts of the phenomenon relate to each other and thus form a cohesive whole. These two elements constitute the *structural aspect* of our experience – the external relationship of the phenomenon to its context (called the *external horizon*) and the internal relationship of its parts to each other (called the *internal horizon*).

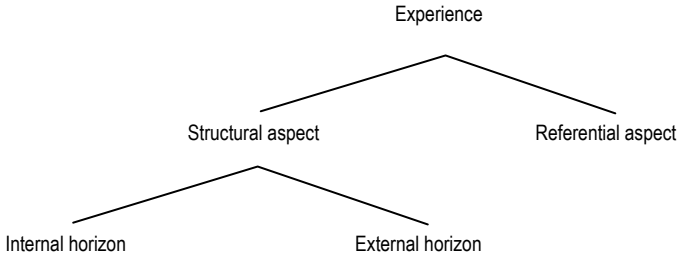

Figure 3.1 Experiencing a phenomenon
(Marton & Booth, 1997, p.88)

Furthermore, in order to know what we are experiencing, we need to be able to assign a meaning to it. It has to occupy its own unique place in our world of experience. Therefore, in addition to the structural aspects of our experience there is a meaning aspect, also known as the *referential aspect*.

Though we may subdivide experience in this way in order to study it, the structural and referential aspects are closely related and experienced simultaneously. These aspects of experience may be represented diagrammatically, as in Figure 3.1.

Now, our experience of any phenomenon may be endlessly variable. However, in order to make sense of each particular phenomenon we must somehow differentiate it from other phenomena in the world around us. If our experiences of phenomena were undifferentiated, then nothing would ever seem different from anything else. For each phenomenon, we must identify a limited number of significant aspects which characterise that phenomenon and we must understand these aspects as forming an integrated whole. Thus, we undergo a process of both differentiation and integration of phenomena as we experience them, and we identify the critical features that set them apart from each other.

A central tenet of phenomenography, therefore, is that although the number of possible ways of experiencing any one phenomenon may be limitless, these can be characterised systematically in a limited number of categories which indicate the significant ways that that phenomenon is constituted by a group of people, such that it stands apart from other phenomena in their world. Phenomenography thus offers outsiders a means of gaining access to a group's complex, personal experiences.

3.2.3. Second order perspective

Further, phenomenography investigates the relationship between people and phenomena. This research approach does not concern itself with the attributes of the person (such as their mental states, as a psychological investigation might) nor does it study specific aspects of the phenomenon (such as its physical features, as an archaeological investigation might). Rather than focussing on the person or on the phenomenon, it examines the person's experience of the phenomenon. It attempts to understand the phenomenon from the insider's point of view. This is referred to as *the second order perspective* (Marton & Booth, 1997, p.117).

The adoption of the second order perspective results in descriptions of the relationship between a subject (for example, IT professionals) and an object (for example, ethics). Phenomenography breaks down the separation of people from the object of their attention and can enable the researcher to access people's subjective world (Bruce, 1999). The researcher thus arrives at the participants' ways of experiencing or conceiving of the world, their relationships with the world, which may be represented diagrammatically as in Figure 3.2.

The relationship between subject and object is thus contributed to by both subject and object. In this way, a person's knowledge of a phenomenon is influenced by the object of their attention but it is also influenced by that person's interpretation of that object. Thus, knowledge is constituted through the interaction of the person and the phenomenon (Bruce, 1997; Prosser & Trigwell, 1999; Ramsden, 1992; Trigwell, 2000).

In pursuing the second order perspective, phenomenography sees as valid any experience of the phenomenon under investigation, withholding judgement with respect to its logicalness or functionality. The aim is not to judge or explain the world but to represent the world faithfully from the point of view of the cohort participating in the study. To achieve this, the researcher in one sense suspends their own opinion and past knowledge,

Figure 3.2 Representation of a conception
(adapted from Pham, Bruce, & Stoodley, 2005, p.219)

and seeks to see the world through the participant's eyes – a position that is referred to as *bracketing* (Marton & Booth, 1997, p.119). Some argue that this is not entirely possible, indeed the researcher brings much to the study (Lupton, 2008). My approach is to see the researcher as consciously pursuing an understanding of the participant's view, both where it aligns with their own and where it diverges from their own.

The phenomenographic approach contrasts with methods which attempt to prove a theory or measure a phenomenon against established standards, and which thus impose overbearing external constraints on the participants' responses. Phenomenographic description privileges the participants' viewpoints and intentionally seeks to remain faithful to them.

3.2.4. Categories of description

A phenomenographic approach seeks to present, then, a description of the distinguishable ways the cohort under investigation experiences a phenomenon. This is organised into *categories of description*, each of which is defined in terms of its referential and structural elements as illustrated in Figure 3.1.

The referential aspect of the category is its unique meaning. This is the sense made of the experience and its significance.

The structural aspect of the category is how its various elements relate together. The structural element is subdivided into its internal and external horizons.

Included in the *internal horizon* of a category is its theme. The *theme* (or focus) of a category describes that which is at the centre of attention when a participant experiences the phenomenon in the way depicted in that category and distinguishes that category from the others.

Included in the *external horizon* of a category is its thematic field and margin. The external horizon describes that which lies at the outer limits of the participant's awareness when experiencing the phenomenon in the way depicted in that category, and defines that category's periphery. The *thematic field* is those things that are of immediate relevance to the focus. The *margin* is those things which form the context of the focus but are only distantly relevant to it.

For example, returning to the snake in the bush, the theme of that experience is the snake itself. The thematic field may include a recollection of a picture of a Red Bellied Black

Snake in a book on highly venomous snakes, a personal fear of snakes and a recent newspaper report on the increased population of snakes. The margin may include an approaching thunderstorm, the washing hanging on the clothesline and the movie you hope to view the following weekend. These depict various levels of awareness of a particular phenomenon determined by various degrees of relevance in a particular circumstance for a particular person.

As the relevance structure of a situation changes, so do the theme, thematic field and margin. Once the snake has fled (or we have successfully fled), our mind turns to returning to the campsite to rescue our drying clothes from the storm. Further, our experience of that afternoon's hike will encompass all these varied encounters. At a point in time, however, something in our experience will be focal (the theme) and have its attendant background (thematic field and margin).

From instant to instant what is focal (and its attendant thematic field and margin) may change. This may occur as we move from one phenomenon to another (for example, from encountering a snake to saving our washing) or it may occur as we experience the same phenomenon in different ways (for example, our hike as we find a snake near the track or as we discern a storm approaching in the sky). Aspects of the phenomenon come into focal awareness, determined by their perceived relevance to us.

We see here the influence of relevance in the relation between subject and object. Not only does the subject interpret what the object brings to the experience, but the subject's interpretation may change according to what appears to be relevant in their particular circumstances. This insight is of central importance when it comes to considering the educational ramifications of the constitutionalist understanding of knowledge, explored further in section 3.2.8.

We experience changing internal and external horizons when we view Figure 3.3, which can be seen as a pair of faces or as the outline of a vase. When seen as a pair of faces, the vase forms the space between them and remains integral to the definition of the shape of the faces, however this space does not appear to be a vase and if it does, the space occupied by the faces no longer appears to be two faces. Thus, this simple phenomenon may be experienced in at least two ways: (a) with the faces as the focus and the space in between in the background; or (b) with the vase as the focus and the space to each side in the background (Pollio et al., 1997).

Figure 3.3 Rubin's vase
(Retrieved July 2, 2008, from http://blog.jbsteiny.com/ 2007_05_01_archive.html)

Our experience of phenomena is rarely so simple, however this illustrates in a stark way the interdependence between the internal and external horizons, and the kind of perceptual boundary which needs to be crossed in order to move from one way of seeing to another. Usually our experience of phenomena is multifaceted and nuanced, and we are able to hold various facets of the experience in simultaneous awareness. The more experiences of a phenomenon we are able to hold in simultaneous awareness, the more complete is our experience of the phenomenon.

In phenomenographic analysis, a category of description is formed in relation to other categories of description, as the researcher discovers in the transcripts that which is critically different between them. Evidence for their existence is drawn from the whole data pool, not just one interview. Thus, the categories of description represent the experience of the whole group.

3.2.5. Outcome space

Each phenomenon may, thus, be experienced in a number of different ways by a particular group of people, as described by the categories of description. These categories of description together constitute a system which describes the phenomenon from that group's perspective. In this system the categories relate to each other in some logical way. Typically, they form a hierarchy of increasingly complex awareness of the phenomenon, though this is not obligatory. Such a system of interrelated categories is represented in an outcome space, which may be described in prose or presented diagrammatically (perhaps as a Venn diagram or as a table).

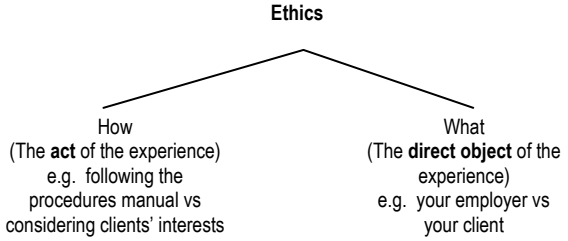

Figure 3.4 The how and what aspects of ethics (adapted from Marton & Booth, 1997, p.84)

As we take a comprehensive view of the phenomenon, its referential and structural elements seen together in the outcome space, we discern common threads running through the categories of description. These common threads change with each category but are found in every category. For example, in our experience of snakes a common thread may be our emotional response to the presence of a snake, though that response may range from dread to pity in categories that range from the snake as a threat, to the snake as an endangered animal. These changes across the categories are called *dimensions of variation*. The dimensions of variation indicate how the various categories in the outcome space relate together, showing for example on what basis they are arranged in a certain order. In our experiences of snakes ranging from dread to pity there may be intermediary categories between these extremes (for example, respect or curiosity), arranged along the dimension of our emotional response.

The representation of the interrelated conceptions of a cohort (that is, the outcome space) is useful in giving insight into the range of experience of that group. In as much as the cohort represents a larger group, the resulting description represents the experience of

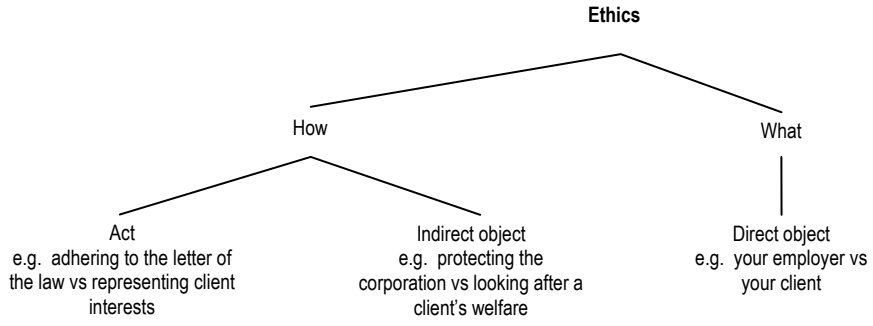

Figure 3.5 The expanded experience of ethics (adapted from Marton & Booth, 1997, p.85)

that larger group. Outsiders are thus granted an insider's perspective into the group's collective experience of the phenomenon. Such insight includes an understanding, through the outcome space, of the logic with which the cohort constructs or makes sense of their world. These insights lay an invaluable foundation from which educational curricula and techniques tailored to that cohort may be developed.

3.2.6. The how and the what

The *how* and the *what* are recognised designations in phenomenographic analysis. We have already explored the structural and referential aspects of experience. This understanding is enhanced by exploring the related aspects of the how and the what of the experience of ethics, as represented in Figure 3.4.

The how of the experience of ethics describes the way we act, how we put ethics into practice. This is known as the *act*. It may be seen as the process aspect of the experience of ethics. For example, a professional may put ethics into practice by following the rules set forth by their job's procedures manual or alternatively they may put ethics into practice by considering their clients' interests.

The what of the experience of ethics describes the intended object, that which our ethical practice is focussed on. This is known as the *direct object*. It may be seen as the content aspect of the experience of ethics. For example, a professional may focus on their employer (their right to have as profitable a company as possible) or alternatively the

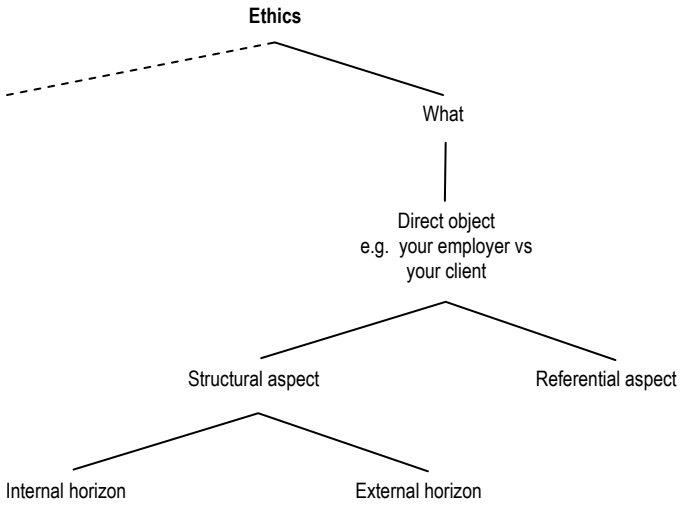

Figure 3.6 Partial structure of the whole experience of ethics (adapted from Marton & Booth, 1997, p.91)

professional may focus on their client (their right to receive value for money).

The act, in fact, has two facets. There is the action taken, for example vigilantly following company rules (that is, the letter of the law). There is also the intention lying behind the act, which is known as the *indirect object*. For example, a professional may follow company rules so they protect the organisation from harm or a professional may represent the client's interests in order to look after the client's welfare. The diagram can now be expanded as in Figure 3.5.

As indicated previously, our understanding of a phenomenon is considered to be more complete the more experiences of it we hold in focal awareness at one point in time. For example, in the case of the direct object, an employee may simultaneously focus on making their employer profitable and giving their client value for money. From a phenomenographic perspective, this would be a more sophisticated experience of ethics than just experiencing ethics as making a profit for their employer.

Each of these aspects (the act, indirect object and direct object) may be described using the structure illustrated in Figure 3.1, that is, with referential and structural aspects, and including internal and external horizons. This is illustrated in part in Figure 3.6 and expounded fully in Table 4.1.

3.2.7. Terminology

The phenomenographic terminology used in this research can now be drawn together for ready reference into Table 3.1. This terminology reflects the type of phenomenography employed in this current study (mostly following Marton & Booth, 1997).

Table 3.1 Phenomenographic terminology

Conceptual tool	Description
Phenomenon	In terms of awareness, anything that humans can perceive. A phenomenon is how sense is made across contexts. It is the abstraction of the experience of specific situations, for example, the concept of "table" in classroom, dining room and workshop. A phenomenon is represented in an outcome space.
Variation	The goal of phenomenographic research is to elicit and represent the critical variation of a group's experience of a phenomenon. What is critical is determined by its potential contribution to the description of the experience, for example, the proposed addition may contribute to the description's completeness or give it more explanatory power.
Conception (Experience)	The way humans understand, see, experience, comprehend… a phenomenon (there are many synonyms used interchangeably). A person's conception of a phenomenon is more complete the more aspects of the phenomenon they are aware of simultaneously. This experience is the relation between a subject (a human being) and an object (the phenomenon they are experiencing). Conceptions are represented in categories of description.

Conceptual tool	**Description**
Second order perspective	The attitude taken by the researcher throughout the research, in order to elicit, discern and describe the subject-object relations for a participant group involved in experiencing a particular phenomenon. It requires consciously setting aside, or being aware of, personal views as much as possible and seeing the phenomenon through the participant's eyes. As indicated under conception, the researcher also seeks the relational view, that is, they do not interest themselves in the subject (for example, the psychology of the participants) or in the object (for example, its physical features), but in their relation. It thus includes, but is richer than, a second person perspective.
Outcome space	A global representation of a phenomenon, showing its constituent parts (that is, categories of description) and how they are related. The interrelationships of the categories form the structural aspect of the phenomenographic description of the experience. These categories are always logically related. They are typically (but may not be) hierarchical, for example, they may be placed in order according to their complexity. The outcome space should represent all the critical experiences of the phenomenon for the participant group studied.
Category of description	Also known simply as a category, this is a representation of a conception. Thus, a category is one way a phenomenon is experienced by a participant group. It is determined in relation to the other categories found in the data, that is, it is not determined in isolation. It is distinguished from other categories by its theme. Many categories, however, may share the same margin. Each category is based on evidence from the data. However, a category does not represent one person and may be constructed from fragments of evidence in many participants' accounts. A person's awareness of a phenomenon may change according to what is central to their attention (thematic) and what is marginal, determined by its perceived relevance in a particular context. One person may hold many categories of description and one category of description may be held by many participants.
Theme (Figure/ Focus)	The defining element of a category, it is what is central in the participant's awareness when experiencing the phenomenon in the way described by that category, in other words the things that are figural. It is where the focus of attention lies in that category. Each category has a unique theme.
Thematic field	The context of the theme which is immediately relevant to the object of awareness, for example, this paragraph may be the theme, while ideas such as the previous definition of a category of description are immediately relevant and in the thematic field.
Margin (Fringe)	What is not central in awareness for a category, but is related and on the periphery of awareness, or in the background. These are not immediately relevant to the meaning of the theme, for example, looming deadlines or appointments which impact on how much time there is available to read this text are part of its wider context. Several categories may share the same margin.
Awareness	This is the determiner of what is thematic in the continuously changing nature of experience, whereby theme, thematic field and margin are ever changing and thus causing us to continuously constitute our experience. What is the margin one moment may become the theme the next, if for some reason we are caused to perceive it as being relevant to our experience.
Perceptual boundary	The conceptual line crossed when moving between theme, thematic field and margin. Sometimes used synonymously with external horizon. This is a term used only by some QUT Faculty of IT phenomenographers.
Dimensions of variation	Aspects of a phenomenon that appear across categories but change within each category. These are named by some "themes of expanding awareness".
What	An aspect of experience, which describes that towards which it is directed, that is, its intended object. It is synonymous with the direct object of the experience, for example, the what of learning to program may be a certain spreadsheet function. The what and the how are the two basic analytical parts of an experience.
Direct object	The what or intended object of an experience. It has both referential and structural aspects and can be represented with an outcome space and categories. It is also known simply as the object.
How	An aspect of experience, which describes how it is enacted. It includes both the act and the indirect object. The what and the how are the two basic analytical parts of experience.
Act	Part of the how aspect of experience, intimately related to the indirect object. It is the performance aspect of the experience, how the subject pursues or practices the experience, for example, the act of learning to program may be reverse engineering open source spreadsheet applications. The act has both referential and structural aspects and can be represented with an outcome space and categories. The act and indirect object are the two basic analytical parts of the how.
Indirect object	Part of the how aspect of experience, intimately related to the act. It is the intention behind pursuing the act or the capability desired as a result of the experience, for example, the indirect object of learning to program may be understanding how others have solved programming difficulties. It has both referential and structural aspects and can be represented with an outcome space and categories. The act and indirect object are the two basic analytical parts of the how.
Referential aspect	Also known as the meaning aspect, this is an element of description of experience intimately related to the structural element. It accounts for the significance of the experience in the awareness of the experiencer.
Structural	An element of description of experience intimately related to the referential element. It accounts

Conceptual tool	Description
aspect	for the inter-relations of the constituent parts of the experience and their relation to the whole. It also accounts for the whole and its distinction from the environment in which it is situated. Its elements are the internal horizon and the external horizon.
Internal horizon	A structural element of the description of experience, accounting for how its internal elements are related and make up the whole. This includes the theme.
External horizon (Ground)	A structural element of the description of an experience, accounting for the shape of the phenomenon, its immediate environment and all other aspects of the wider environment. This includes the thematic field and the margin. It is the place things become marginal as well as all marginal aspects, stretching out to infinity.

These vocabulary items reflect the core conceptual tools of the method as I interpret it and were used to help ensure this interpretation of the method was followed consistently throughout the research process.

3.2.8. Kinds of phenomenography

Phenomenographic approaches have been characterised as differing along a continuum from positivist-objectivist to interpretivist-subjectivist (Lupton, 2008). As such, they carry differing expectations of data collection and analysis. In simplistic terms, the positivist-objectivist seeks to detect and remove researcher influence as much as possible, whereas the interpretivist-subjectivist acknowledges and exploits researcher input. For example, in the interview process the former requires strict conformity, with questions asked the same way and in the same order each time, whereas the latter approaches the interview as a dialogue which follows its natural course. In analysis the former approaches the task as a team and conducts a verification process to eliminate researcher bias, whereas the latter accepts an individual researcher's analysis and the results are accepted as constructed through interpretation. In my understanding, most phenomenographers are situated along this continuum and only a few would exemplify the terminal ends of it.

I identify with the interpretivist-subjectivist end of the spectrum. Therefore, I find an affinity with the approaches of Ference Marton and Jörgen Sandberg, and much of my interpretation of the method is drawn from their publications (Marton & Booth, 1997; Sandberg, 1994).

Concerning analysis, differences have been found amongst phenomenographers in:

1. the amount of each transcript handled during analysis (for example, selected quotes, large sections or whole);
2. whether an individual or team approach is used;

3. the ways of managing the large data pool (for example, adopting different perspectives or selecting a subset of representative transcripts);
4. the approach to the structure of the outcome space (for example, emergent or interpreted);
5. the kinds of validity checks (for example, communicative or pragmatic); and
6. the kinds of reliability checks (for example, coder, dialogic or transparency).

(Akerlind, 2005)

My approach has been to use selected quotes, as an individual researcher, through an initial representative set of transcripts, with an interpreted structure, validated by communicative checks and tested through transparency.

3.2.9. Variation theory

The educational relevance of understanding the nature of experience and being able to describe it has to do with the nature of learning, as understood in phenomenographic terms (Marton & Booth, 1997).

Learning is seen from this point of view as the re-forming of a relationship with the world which is already established in some way. Our learning about something builds on the foundation of what we already know – a knowledge we have gained through experience. Otherwise, we have no means of making sense of the phenomenon about which we are learning. When learning, learners call first on their existing knowledge to situate the phenomenon which they are learning about. They thus typically move from the whole to the parts, from the general context to the specific details. So, learners address themselves to the general context of their learning environment first, before attending to the specific content they are supposed to learn. This understanding of learning is supported by empirical studies into learning. "Learning is mostly a matter of reconstituting the already constituted world... genuine learning always relates to the learner's reality... When the whole is missing, learning is very likely to fail" (Marton & Booth, 1997, pp.139-140). For example, for someone to learn to read and write they must first understand what it means to be literate in a general sense and how that may be significant for them. For someone to learn about practicing ethics they must first understand what it means to be ethical in general and how that may be significant for them.

Learning is understood to have occurred when we become capable of experiencing a phenomenon in a new (usually more sophisticated) way. An indication that we have learned is the ability to simultaneously experience a phenomenon in more ways than previously. For example, we may move from experiencing ethics just as fulfilling our duties towards our employer to also experiencing ethics as meeting our clients' needs. When we have experienced a phenomenon in a more sophisticated way, we also become capable of discerning new aspects of the phenomenon or new aspects of previously discerned features. In experiencing ethics as meeting our clients' needs, we understand in a new way our responsibility towards our employer. Our responsibility towards our employer now has limits or includes new aspects to it. Perhaps our responsibility towards our employer is now understood to not extend to the point of exploiting clients on our employer's behalf. Perhaps it now includes encouraging them to take their clients' needs more into account. Thus, when we learn, the phenomenon appears differently to us.

A novice's experience of a phenomenon, then, is understood not so much as being wrong as it is incomplete. The instructor's goal is to help them build on that incomplete experience and make it more comprehensive. Learning is associated with exposure to critical aspects that broaden our existing understanding of a certain phenomenon. This leaves us changed because, at the very least, the background from which we approach the phenomenon is different. So, a key element in learning is exposure to variation. This is not exposure to any variation, but variation that is critical from an educational point of view (Marton & Pang, 2006; Marton & Tsui, 2004).

This view of learning is quite different from a view of learning in which memorized facts are the primary focus or new behaviour is the main objective. New facts and changed behaviour are likely to result from a change of experience, however much more also occurs. When a learner's experience of a phenomenon changes, they orient themselves towards the phenomenon in a new way. This new orientation means they respond to novel situations in different, more sophisticated ways than previously. For example, an IT employee may not only do what their employer requires in order to secure a profit but also find a way of promoting their clients' interests so both the employer and the client gain.

A key determinant of learning is its "relevance structure" (Marton & Booth, 1997, p.180). This helps the learner to discern the importance of the phenomenon which is the object of the learning situation. This applies the notion of structure in the phenomenographic analysis of experience to the learning situation. Our experience of a phenomenon is

characterised by layers of awareness, with theme and margin changing as different aspects of the phenomenon move in and out of focus. Not all aspects of a phenomenon seem relevant to everyone in every situation, the context in which we experience a phenomenon determines in our eyes which elements we should hold in simultaneous awareness. Learners therefore need to have their relevance structure needs met first, situating the phenomenon with respect to their existing experience and indicating its importance, before they are ready for new content. As the instructor approaches the phenomenon from the point of view of its relevance structure, they offer the learner a partial view of the end goal and stimulate the learner to fill in the details.

Another general principle of teaching in variation theory is the "architecture of variation" (Marton & Booth, 1997, p.185). At the very beginning an instructor needs to decide what they want the learners to learn, that is what features are important out of all the ways the object of learning may be experienced (in other words, what are the critical features). Such features may be experienced in various ways, so the instructor's role is by different means to bring the learners into contact with variation that they otherwise may have overlooked perhaps by taking it for granted. For example, an ethics instructor may want the learners to develop their awareness of levels of responsibility. To this end, they may bring to the learners' awareness not only their responsibility to their employers but also their responsibility to their clients. The learners' awareness may be drawn to these aspects through various methods, including for example case studies and discussion, however the important objective is that they are introduced to variation that they may have previously not been aware of.

Learners may be introduced to variation by the instructor asking questions at crucial times, directing group discussion, introducing novel problem-solving approaches and changing the point of observation. The specific method appropriate to a specific object of learning for a particular learner (or group) can only be determined in the actual context of learning. Whatever method is employed, the role of the instructor is to try to ensure that the learners are experiencing the object of learning in new, critical ways (Marton & Tsui, 2004).

The variation presented may be between the object of learning and its environment, for example what is ethical and what is unethical. It may also be between various elements of the object of learning, for example the elements of responsibilities and rights in ethics. It may also be between dimensions of the elements of the object of learning, for example the various responsibilities represented in ethics.

Teaching strategies associated with this approach to education include:

1. Make the learners' conceptions explicit to them;
2. Focus on a few critical issues and show how they relate;
3. Highlight the inconsistencies within and the consequences of learners' conceptions;
4. Create situations where learners centre attention on the relevant aspects;
5. Present the learner with new ways of seeing;
6. Integrate substantive and syntactic structures;
7. Test understanding of phenomena, and use the results for diagnostic assessment and curriculum design; and
8. Use reflective teaching strategies.

(Marton & Ramsden, 1988, pp.277-280)

The indicator of success of an ethical education is thus not primarily how much intellectual knowledge the learner has acquired (for example, how to identify deontological vs teleological approaches to ethics) or primarily how much the learner's behaviour has changed (for example, being able to apply decision making techniques to ethical dilemmas), but whether they have entered into a new relationship with ethics.

3.3. How did I gather the data?

3.3.1. Pilot

In 2006 I conducted four pilot interviews to test the proposed interview schedule, for its clarity and effectiveness in eliciting the experience of ethics. The interview schedule was adapted in the light of the pilot results, adjusting the object of the research and replacing one of the scenarios.

A significant change resulting from the pilot interviews was the broadening of the research object, from ethical decision making to ethics. The need for this change became clear in view of the fact that the pilot participants referred extensively to the wider context of their decision making as having a significant effect on their capacity to take ethical decisions. It was evident that a larger frame of reference was needed in order to adequately represent their experience. An investigation of their experience of ethics could allow them to talk

about their experience of decision making and so did not eliminate this aspect, however an investigation of their decision making threatened to unduly narrow their focus.

During the interviews scenarios were used as prompts for discussion. In the course of the pilot it appeared that these scenarios were not diverse enough. It seemed that scenarios which were too close to the participant's experience didn't prompt sufficient thought. One participant mentioned that the scenarios were just like what they faced in their work, then commented on them reasonably summarily. The purpose of the scenarios to help push the participants to their conceptual limits was not successful in this case. Some argue, when criticising scenarios, that they are typically not close enough to the participants' experience and are therefore too hypothetical or hard to understand. I would argue for a variety of scenarios, so the participants have an opportunity to comment on a scenario they are familiar with but also are stimulated to think in new ways so the limits of their understanding can be revealed.

The adjustments made as a result of the pilot interviews enabled the project to proceed both in conformity to the research aim and in accordance with the chosen methodology.

3.3.2. Sampling

In 2007, once the final interview schedule was established, I interviewed 30 IT professionals who represented a breadth of experience in the IT profession. As is customary in phenomenographic research, the participants were chosen to represent a potentially high degree of variation in their experiences, as much as possible across age, gender, race, educational background and IT sub-discipline. Additionally, to widen this sampling for variation and to make the study as representative of the wider IT community as possible, I made sure both members and non-members of professional bodies were included. (However, the aim of the study was not to compare the experience of members with non-members.) Twenty semi-structured interviews with carefully chosen participants have been found to be sufficient with respect to their ability to reveal variation in the group's experience (Sandberg, 2000). The employment of purposive sampling chooses the pool from which potential participants are drawn, in order to maximise the opportunity for realising the research goal of representing variety. I regularly monitored the profiles of the participants interviewed in order to determine whether the sampling needed to be modified.

To limit the need for travel, all participants were found within Southeast Queensland. This is a population growth area of Australia which includes a diversity of IT professionals. I sent a letter of invitation (Appendix 1) to various organisations employing IT professionals, asking the directors if they would be willing to disseminate it to their personnel. I also sent some letters directly to individuals who were recommended to me. The organisational interests were diverse, engaged, for example, in developing software solutions, providing public services, managing information and offering legal services. They spanned government departments, educational institutions, private companies and independent consultancies. The participants volunteered to be involved, and so could be seen as having an interest and perceived ability to talk about ethics, however this seems appropriate given the object of this study.

Other IT ethics studies have been conducted with students, on the basis that student views can be extrapolated to practitioners. However, this supposition has been disputed. Students approach computing out of a different personal and professional background, and are highly influenced by their career plans and what they perceive to be accepted as normal business practice (Athey, 1993).

> … findings suggest that differences in ethical decision making between IS students and professionals occur with sufficient frequency that researchers should exercise substantial caution in generalizing their ethical decision making results from student samples to professionals in the workplace. ... the observed differences between professionals and students indicates that people have a tendency to view many ethical situations differently based on their experience... (Cappel & Windsor, 1998, p.29)

Given my specific interest in practitioners' experiences and the fact that a sufficient number volunteered, I exclusively interviewed practicing IT professionals.

In keeping with the research goal of representing variation, the participant group was quite diverse, representing males and females, a spectrum of ages from early career to seasoned practitioners, cultural heritages from many continents, membership and non-membership of professional bodies, and various levels of ethical training (refer to Table 3.2). Given the fact that I do not intend to statistically represent the wider IT practitioner workforce, the numerical representation of each sub-group is not important except to indicate diversity of experience. However, it is interesting to note that the participants' professional membership roughly equates with estimates that about 5% of the IT workforce are members of the principal Australian computing professional body (the Australian Computing Society).

The earlier discussion concerning who qualifies as a professional in this study is relevant to who was included in this study's sample (in section 2.2). I am interested in the experience of those who consider themselves to be professionals, in contrast to only those who qualify as professionals according to the traditional checklist. In order to draw on a wide range of experience, as required by phenomenography, a broad understanding of what it means to be a professional is necessary. This embraces those who are members of a formal professional body as well as those who are not members of a professional body but nevertheless see themselves as acting in a professional capacity.

As a researcher, I wanted to be careful not to delimit the object of my study in a way that pre-defined aspects that were better left to be discovered. In this case, I choose not to define professional too narrowly in an environment where such definitions are changing. This allowed room for the participants to influence the definition. We thus arrived at a definition of a professional determined by both myself and the participants. For example, one participant was uncertain about their qualification to participate in the study because they saw themselves as a librarian rather than an information technology professional. Their role, however, was entirely to do with purchasing, disseminating and constructing IT networks across a large organisation. In the light of their work, I decided to include their interview in the experience pool of IT professionals. On the other hand, IT salespeople, who I may not have first thought to include as IT professionals, saw themselves without question as IT professionals and I became convinced of the merits of their case for inclusion.

Concerning Table 3.2, one participant considered themselves equally influenced by two

Table 3.2 Participant sample

Gender		Age				Cultural heritage								Professional membership				Ethical training level				
Male	Female	< 30	31-40	41-50	51+	United Kingdom	Continental Europe	Eastern Europe	Central Asia	East Asia	North America	Australia	New Zealand	None	ACS	ALIA	Other	None	School	Tertiary	Professional	Other
21	9	3	12	12	3	4	1	1	2	1	2	18	3	20	2	5	7	7	8	16	14	8

Key:
Professional membership – ACS, The Australian Computing Society; ALIA, The Australian Library and Information Society; Other: IRMA; Australian Interactive Media Industry Association; Women in IT; System Administrators Guild of Australia; Australian Information Security Association; The International Information Systems Security Certification Consortium; The Australian Institute of Management.
Ethical training level – Other: Organisational internal events; Interactions with friends

cultural heritages and some participants were members of more than one professional body, hence the elevated totals in those areas. The age range of the majority of participants was from 31 to 50 years old, that is to say mostly with a mid- to high- level of experience in life and in the field.

A diverse range of roles was represented in the sample, including technical, management, development and teaching positions: Applications Developer, Asia Pacific Manager, Audit Business Manager, Consultancy Director, Corporate Systems Administrator, Director of Information Management, Identity Management, Integrated Logistic Support and Quality Supervisor, Information Services Manager, IT Architect, Library Executive Manager, Library Systems Manager, National Business Development Manager, Platform Architect, Principal Advisor, Project Manager, Security Manager, Senior Analyst Programmer, Senior Lecturer, Senior Librarian, Senior Manager, Software Developer, Systems Administrator SAP, Systems Engineer, Technical Support, Tertiary Lecturer and Web Development Coordinator.

3.3.3. The use of interviews

Some criticise the use of interviews for data collection because of their reliance on the participants' conscious understanding in contrast to their tacit knowledge (Narvaez & Bock, 2002). My experience is that the interview interaction tends to elicit responses from the subconscious, evidenced from participants' occasional expressions of surprise at statements they make. The social setting also tends to draw more from participants than they initially intend to offer, again evidenced by their expressions of surprise.

Interviews are conducted in a social context which is not anonymous. Therefore, they are also thought to bias the participants towards representing themselves in a certain light to the interviewer, rather than presenting their actual experience. For this reason, Saljo (1997) asserts that phenomenography really collects and reports on "accounting practices", that is, ways of talking and reasoning, and studies "the mutual constitution of human experience and discursive practices" (p.188).

Desirability bias, the tendency of speakers to seek to please those listening, has been variously understood to be based on a need for approval, impression management and self-deception (Leite & Beretvas, 2005). The effects of social desirability bias seem to be directly related to confidentiality concerns. Indeed, personal interviews have been found to be more effective in eliciting sensitive information than telephone interviews because the interviewer is able to more effectively allay participants' confidentiality concerns

(Aquilino, 1994). This appears to be because the personal interviewer can more easily assure interviewees of their trustworthiness when they promise anonymity (Singer, Mathiowetz, & Couper, 1993). The social proximity of the interview relationship enables the establishment of greater trust. Before the interviews I made sure through an internal check that I was approaching the participants as people rather than just as data sources. Before addressing the formal questions, I highlighted the anonymity of the participants' responses. During the interviews, I built a positive relationship with the participants, and accepted their responses as valid and of worth regardless of my personal agreement or disagreement with them. These measures were designed to alleviate bias introduced by the use of interviews.

I would also argue that the phenomenographic approach to analysis tends to diminish some of the perceived negative effects of interviews. Phenomenographic analysis does not arrive at categories in isolation. Categories are determined in relation to other categories, the expectation being that there are logical relationships between them. This means the statements of one person are supported and interpreted in the light of the statements of others. A direct person-to-category relationship is approached cautiously, however it is accepted if needed. Even if a single person contributes a category, this is a category only found in relation to the other categories in the study and it is supported by logic. Therefore, the influence of one participant is moderated by the contributions of the other participants. It seems unlikely that all participants would misrepresent themselves in the same way. Even if they did, this would reveal the group's cultural bias which would be a worthwhile finding in itself. Perhaps a central question is whether the researcher claims to represent an objective reality, which is a positivist (or objectivist) position rather than a constitutionalist one.

A further concern with the use of interviews for data collection about ethics is the difference between our ability to recognise unethical behaviour and our ability to actually engage in ethical behaviour. This means we are more likely to report ideals rather than actual behaviour (Adam & Ofori-Amanfo, 2000). Since our ideals are an aspect of our experience of ethics and reveal what we esteem as ethical, this does not seem to present a problem to this research.

Although the negative effects introduced by the use of interviews for data collection are limited as much as possible, it must be recognised that the categories formed in this project are constituted out of my experience as the researcher, as well as out of the participants'

experience. I understand this to represent a strength in such studies, admitting the researcher into the process as having a valuable contribution. I do not claim that I am representing in the categories objective knowledge in a positivistic sense, rather that I am offering insight into constituted experience. I bring my own unique insights to the project, which contribute to its usefulness. Such contribution is controlled, however, as indicated in a later section on the dependability of the outcomes (section 3.5).

Despite some difficulties, language is considered to give the greatest access to people's relationships with phenomena (Svensson, 1997). It provides the most direct and reliable way of entering other people's conceptual worlds. It is also a reasonable means of gaining insight into people's ethical intentions. This assumes that those intentions are largely under the conscious control of the participating individuals, although my earlier comments indicate a propensity for the interview dynamics to draw responses from the subconscious.

> If one wants to know whether or not an individual will perform a given behavior, the simplest and probably most efficient thing that one can do is to ask the individual whether he intends to perform that behavior. Since much of human behavior appears to be under volitional control, the best single predictor of an individual's behavior will be a measure of his intention to perform that behavior. (Fishbein & Ajzen, 1975, p.369)

The semi-structured interview remains both an appropriate data collection instrument for phenomenography and a suitable means for accessing people's experience of ethics.

3.3.4. The use of scenarios

In the course of the interview, scenarios were presented to the participants, as a stimulus for discussion (the scenarios are in Appendix 2). Scenarios 1 and 3 were adapted from ACS examples (ACS, 2004) and Scenario 2 from a colleague's example which originated from the Association for Computing Machinery. It was anticipated that some participants may have a limited initial awareness of ethics in their professional practice. These scenarios were meant to help stimulate participants' thinking and connect them with the world of ethics. For participants who had an existing strong connection with ethics, the scenarios served to test their horizons and gauge the limits of their perspective.

Some debate surrounds the appropriate manner in which scenarios should be presented. The scenarios used in this research were written in the first person, in order to help the reader feel part of the scenario, and ended with a call for action, to help force a decision. The topics were chosen in order to represent a variety of situations from a range of viewpoints of IT. It was expected that participants would thus find at least one scenario they readily identified with and at least one scenario that would stimulate them to think

from a new perspective or would cause them to question whether it was an IT ethics scenario at all.

Concerns about using scenarios include (a) their separation from the reality of the participants which makes their response purely hypothetical, (b) their call for reflection which does not necessarily show the way the participants would approach the problem in real life and (c) their emphasis on dilemmas which frames ethics in a particular way. Concern especially surrounds the combined use of scenarios and Likert scale based surveys, as they tend to be too simplistic and not give participants sufficient flexibility in their responses. In-person interviews are the recommended alternative to multiple choice surveys, as they also enable some insight into the level of integration of concepts in the participants' reasoning (Langford, 1995; Randall & Gibson, 1990). In this project, the scenarios were used to provide a starting point from which the conversation flowed. I was alert to trains of thought the interviewees introduced and purposely followed those, rather than let the scenario direct the conversation. I attempted to consistently direct the participants to their own experience and asked for examples from that experience. Therefore, I believe the scenarios fulfilled their role without becoming too influential over the participants' responses.

3.3.5. Interview schedule

The dialogue during the semi-structured interviews was guided by four core questions. The participants' responses to these core questions determined the subsequent interaction, with prompting questions introduced when needed to help the participants fully express themselves. These prompts simply indicated a listening ear (a nod, a "Yes"), or verified that I had heard correctly (repeating the participant's last point), or took the form of a straightforward request for the elaboration of a specific idea ("Can you tell me a bit more about that?"). I took care to express no value judgements with respect to the validity or acceptability of the comments made. All questions were open-ended, to allow the participant maximum control over the direction of the interview. In this way the participants' experience, rather than the researcher's, formed the basis of the analysis (Sandberg, 2000).

I warned the participants before the interview that I may play the Devil's Advocate at times, purposely adopting the opposite point of view to theirs, in order to test their limits, however I assured them that this was not meant to imply a criticism of their experience. In

practice, this type of interaction met mostly with success. Most participants seemed ready to argue for their perspective, however on one occasion this seemed to offend the participant even though they didn't change their point of view to accommodate me.

In the interviews I pursued the objective of eliciting variation in experience, focussing particularly on the participant's experience of ethics. Apart from setting the general focus of the conversation, I conducted the interviews with an openness to the participants' leading. I followed up indications that the participant held views which were unique while at the same time giving them the opportunity to express themselves as fully as possible.

The core interview questions were designed to focus the participants' thoughts on the phenomenon under investigation, leading them from a description of their concrete experience to a more abstract statement (see Table 3.3 for more detail). The prompting questions explored the dual aspects of the participants' experience of the direct object of ethics (the what of the phenomenon) and their experience of the enactment of ethics (the how of the phenomenon).

The interviews lasted on average 30 to 45 minutes. The longest was 90 minutes and the shortest 20 minutes.

The interviews were recorded and transcribed, removing any information that may identify the interviewee. The transcript was then sent to the relevant participant for verification. The subsequent analysis was based on these transcripts.

3.4. How did I make sense of what I had collected?

3.4.1. Contextualised meaning sought

The data set generated by the interviews resulted in approximately 300 pages (120,000 words) of dialogue. Although a computerised word analysis may be helpful in giving some

Table 3.3 Interview schedule

Question	Rationale
1. Explain what kind of IT work you've done and what IT work you do now. Have you employed ethics in your professional life? Describe a couple of these situations.	Starts the participant thinking about their own experience
2. In reference to these examples [3 scenarios supplied pre-interview], are there ethics involved? If so, what are they and how would you respond?	Broadens the conversation to other contexts
3. When you consider situations like these scenarios and the ones you face yourself, what helps you discern what the ethical issues are and how you can resolve them?	Prompts reflection on a more general level
4. In general, what does it mean to you to practise ethics as an IT professional?	Requests an abstract statement

structure to this quantity of information, the meaning behind the words determines their significance for this study, an aspect that can only be ascertained by viewing the context in which the words are spoken. Thus, significant statements made by the participants (that is, statements which identified their experience of ethics and distinguished it from other experiences) were considered in the light of the wider interview. This helped avoid the possibility of misrepresenting a participant's experience by taking their comments out of context.

3.4.2. Iterative cycle

In the analysis I followed an iterative cycle of careful reading of the transcripts, organisation into categories representing the essential aspects of the experiences revealed (understood in terms of their meaning and structure) and return to the transcripts to assess these categories against the interview data. In this way an intimate connection was established between the interpretive categories formed and the spoken word of the participants, each informing the other until the categories reached a stable state. In order to faithfully represent the participants' experience, their words are employed in the descriptions of the categories as much as possible and the descriptions are illustrated by relevant quotes.

After a number of initial readings of all the transcripts, I chose a subset of 9 transcripts for closer work. This choice was based on their likelihood to reveal the widest possible variation in experience and their apparent representativeness of the full set of transcripts. After tentative categories had been developed from this subset I added a further 6 transcripts, chosen on the same basis. Later in the analysis process, I referred to all transcripts with a view to identifying any gaps in the categories, on the basis of including critical variation and representing the range of variation.

My original intention was to use the software package Nvivo (QSR International, Doncaster, Australia) during analysis, however by the time it was installed and ready for use I found I had gained a comprehensive overview of the material through my transcript readings, and had already begun organising them using other means. This other means was mostly using coloured Post-it tags stuck onto the printed transcripts where significant meanings were being expressed, with like-coloured tags indicating similar experiences. (While this method seems unsophisticated, it gave immediate access to the context of the key material and

offered a visual image of the location of the proposed groupings.) I used Nvivo at a later stage, however mostly as a search and organisational tool rather than as an analysis tool.

Comparing this analysis with several previous analyses where I used Nvivo extensively, I believe I gained a better overview of the material this time, though I found it difficult initially to have confidence that I could conduct an adequate analysis without using an electronic tool. The strength of Nvivo is that it forces a close look at the detail in the data and requires a decision regarding its classification. I found this, however, to be required rather early in the analysis process. It has been my experience that once the data is classified in the software it can become difficult to change that classification (not technologically but psychologically). I can also tend to get engrossed in manipulating the software and get distracted from the meanings in the transcripts. It should be noted that this is a personal observation, to offer insight into how the analysis was conducted, and not meant to forward an argument against using the software as an aid to analysis.

3.4.3. Group experience

The primary goal of the analysis was to represent the variety of experiences described by the participants, as a group. Any one category was not designed to represent comprehensively any one participant's experience, rather the categories are representative of the group's collective experience of ethics. Therefore, representative quotes illustrating a single category may draw from several interviews. Also, one interview may contribute to the formation of a number of categories. I endeavoured in the categories to represent all the experiences of the participants interviewed.

3.4.4. Meaning and structure

The analysis results were determined by the meaning and the structure as discovered in the interview transcripts. Initially, I found two sets of categories, individually focussing on the responsibilities and rights of the professional. These separate sets, however, had significant areas of similarity between them, both in their meaning and structure, and this lead me to combine them into categories with a dual responsibilities-rights focus.

The phenomenon under investigation gives a general direction to the interaction and analysis, however the precise contours of the results are discovered in the course of data collection and analysis. It has been observed, nevertheless, that the phenomenon plays a role in determining the shape of the results (Bruce, 2002).

In presenting the categories, two aspects are described: (a) their distinctive meanings and limits; and (b) their relationships with each other. In this way, the reader gains an understanding of each experience but also sees how the experiences interrelate. It is envisaged that a reader may identify closely with some categories, may come to acknowledge the existence of other categories and may see how these relate together.

3.5. How can what I have done be depended on to be true?

Phenomenography is based on an understanding of knowledge as being constituted and in a state of change (Sandberg, 1994). Questions concerning the degree to which the research results align with an external, fixed reality (a positivist expectation) or the degree to which the research accesses the inner workings of the participants (a constructivist expectation) are not considered relevant.

The central methodological issue is the reliability of the researcher's interpretation. This responds to a concern that the researcher has unduly imposed their own experience on the analysis and has thus misrepresented the participants' experience. A suggested method of responding to this concern is to follow the steps of phenomenological reduction:

1. An orientation to the phenomenon "as and how it appears throughout the research process";
2. A focus on description rather than explanation of the phenomenon, not going beyond the participants' experience;
3. Treating all aspects of experience expressed by the participants as equally significant (named "horizontalisation");
4. Searching for a basic meaning structure which is stable across the data; and
5. Respecting the structure of experience (that is, using "intentionality as a correlational rule").

(Sandberg, 1997, p.210)

Building on these measures of reliability, the trustworthiness of the outcomes of interpretive studies may be defended on the basis of:

1. A "demonstrable orientation towards the phenomenon" (achieved by phenomenological reduction, the approach listed above);

2. A conformity to the phenomenon of interest; and
3. Communicability.

(Bruce, 1997, p.106)

I now comment on these, with respect to this study.

3.5.1. A demonstrable orientation towards the phenomenon

The whole research process was oriented towards the participants' experience of ethics. This was achieved by constructing interview questions which directed the attention of the participants towards ethics and towards their own experience. My introductory remarks before each interview indicated my interest in the participants' own experience and advised that I would draw them back to their own experience if necessary. The interview began with their experience and that orientation was maintained throughout the interaction.

A core question in assessing the pilot interviews was whether the questions adequately maintained a focus on ethics and elicited the participants' experience. They were adjusted to ensure they met those goals.

While conducting the interviews, I strove to sustain an unbiased interest in the interviewees' experiences and endeavoured to see the world through their eyes. I was able to see the difference between their experience and mine, however reserved this as an observation rather than a judgement.

During the analysis process, I sought and described the participants' lived experience. By using participants' vocabulary in the descriptions their voice and influence was allowed to permeate the analysis. The iterative nature of the analysis process, between the description and the interview transcripts, firmly grounded the result in the data collected.

The analysis sought a logical construction across the categories and was conducted according to the phenomenographic understanding of the structure of experience.

3.5.2. Conformity to the phenomenon of interest

The interview questions were carefully chosen to constantly direct the conversation to the participants' experience of ethics. Prompts were used during the interview to maintain that focus.

The whole interaction was framed by "situated practice", rather than hypothetical constructs (Schoultz, Saljo, & Wyndhamn, 2001). This was achieved by periodically referring the participants back to their experience and by asking for concrete examples.

The categories formed during analysis maintain a logical cohesiveness in relation to the experience of ethics. The progressive nature of the category relationships indicates their consistent association with the phenomenon.

With a view to ensuring that a demonstrable orientation towards the phenomenon and conformity to the phenomenon of interested were maintained, I devised a checklist which was applicable across various stages of the project (Table 3.4).

Table 3.4 A phenomenography checklist

Conceptual tool	Assessment	√
Phenomenon	Am I defining sufficiently the phenomenon of interest?	
	Am I ensuring that each aspect of my research (data gathering, analysis, description) stands in clear relation to the phenomenon of interest?	
Variation	Am I ensuring that each aspect of my research (data gathering, analysis, description) contributes to the goal of representing variation?	
	Am I ensuring that each element of variation represented is of critical importance?	
Conception (Experience)	Am I considering the relation between subject and object in each aspect of my research (data gathering, analysis, description)?	
Second order perspective	Am I consciously taking control of my personal views and endeavouring to see through the participants' eyes?	
Outcome space	Am I representing the participant group's experience comprehensively in the outcome space?	
	Am I relating the categories logically?	
Category of description	Am I forming the categories in relation to other categories in the outcome space?	
	Am I representing each category with a unique theme?	
	Am I basing the categories on empirical evidence?	
Theme (Focus)	Am I representing the focal point of each category in its theme?	
Thematic field	Am I including only items of immediate relevance to the theme in the thematic field?	
Margin	Am I representing the peripheral aspects of the categories in the category margins?	
	Am I ensuring the margins are related to the themes of the categories?	
Awareness	Am I discerning the changing nature of awareness for the participants?	
Dimensions of variation	Am I identifying dimensions that appear in many categories?	
	Am I identifying dimensions that change across categories?	
What	Am I describing the intended object?	
Direct object	Am I identifying a unique intended object?	
How	Am I describing the way the experience is enacted?	
Act	Am I identifying a unique enactment of the experience?	
Indirect object	Am I clearly describing the intention behind the enactment?	
Referential aspect	Am I demonstrating the significance and uniqueness of each category?	
Structural aspect	Am I describing the constituent parts?	
	Am I describing the way the constituent parts relate?	
	Am I describing how the constituent parts are distinguished from the wider environment?	
Internal horizon	Am I representing all the constituent parts?	
	Am I clearly describing the relationship between the constituent parts?	
External horizon	Am I adequately describing the environment in which the phenomenon is experienced?	

3.5.3. Communicability

Communicability is relevant to the interview, analysis and verification phases of interpretive research (Sandberg, 1994).

In the interviews, the meaning of participants' statements was verified through a two-sided dialogue which enabled the participants to express themselves fully and enabled myself to understand them comprehensively.

In the analysis, the descriptions were produced with direct reference to the interview transcripts. Specific statements were examined for their meaning in the light of their broader context in the transcript. The use in the description of quotes illustrative of the participants' statements also grounds the description in the participants' own communication.

I presented my results in faculty seminars where I was studying, and in national and international conferences. On each occasion the feedback indicated the communicability of the results.

The final check for reliability rests with intelligent reading of the resulting category descriptions and outcome space. The description should be transparent and intimately linked to the data collected. The analysis is thus made accessible to the reader so they are able to testify to the defensibility of the conclusions drawn.

3.6. Can these findings be applied to a wider context?

A question frequently raised of research is its usefulness for application to wider contexts.

The wider usefulness of the outcomes of this study lie not in any claim to present results that can be universally applied to all cohorts, but in their usefulness as a source of stimulus for interactions with other cohorts. The closer a cohort is in nature to the group studied, the more likely it will be that the categories found in this study will be highly representative of the new group. A tool is provided later in this account to help determine how closely the new group conforms conceptually to the cohort of this project. If we accept that a phenomenon may be experienced in a limited number of qualitatively different ways by similar participants, the results of this study are likely to correspond closely to the experiences of other Australian IT professionals.

3.7. Is this ethical research?

This project was scrutinised by the QUT Office of Research and clearance given on 10th March 2006, with authorisation "to immediately commence" (Appendix 3 displays the text of the authorisation email).

During data collection and analysis care was taken to ensure the anonymity of the participants:

- after transcription and verification, the recorded interviews were erased;
- any identifying information was removed from the transcriptions; and
- the analysis was based on these transcripts.

Additionally, all data is stored in a secure environment accessible only to the researcher.

The complaint procedure, in case of concern about the conduct of the project, was explained to each participant and they signed a consent form (see Appendix 4) before the interview commenced.

Permission has been granted by the relevant authors for the use of all diagrams reproduced in this document.

3.8. Conclusion

Phenomenography was chosen as the method which best provided the means of collecting and analysing the richness of ethical experience, required to answer the research question of this investigation. It adopted the desired experience-first approach and provided a means by which those insights may be applied in an educational setting. Thus, phenomenography held good promise of providing the means by which our insights into IT professional ethics formation may be advanced. In the next chapter I turn to the resulting description of IT professionals' experience.

Chapter 4. Presenting IT professionals' experience of ethics

This chapter presents critical differences in IT professionals' experience of ethics, following the phenomenographic approach described in chapter 3. The categories presented here emerged from data collected in semi-structured interviews conducted with a wide variety of IT professionals.

The professionals who participated in this study experienced ethics as citizenship of five distinct though related worlds. *Citizenship* represents where professionals choose to make their home in the ethical terrain. (Acknowledgements to Participant 13, who inspired this label by referring to the ethical conduct of a professional as being an aspect of their "organisational citizenship".) The five citizenships which were derived from the data and which serve to characterize these worlds are:

1. *Citizenship of my world*;
2. *Citizenship of the corporate world*;
3. *Citizenship of a shared world*;
4. *Citizenship of the client's world*; and
5. *Citizenship of the wider world*.

The professionals' awareness in the citizenships progressively expands to embrace other people. Each subsequent citizenship does not replace but serves to inform and modify those preceding it. IT professionals experience ethics as:

1. *Citizenship of my world* when they are concentrating on the preservation of the rights of those who belong to their inner circle of themselves, family, friends and close colleagues. This is a defensive position, with the professional choosing typically to guard against the introduction of negative consequences;
2. *Citizenship of the corporate world* when their awareness expands to include their employer. Here they are concentrating on upholding the rights of their employing organisation. This is a dutiful position, with the employee seeing their

responsibility in terms of their role in the organisation, typically that of reporting to their supervisors and devolving decisions up the chain of command;

3. *Citizenship of a shared world* when their awareness expands to include their clients. Here they are concentrating on upholding both their own rights and the rights of their clients. This is a partnering position, with the goal being a win-win situation where both the professional and their client benefits, and both the professional and the client are expected to contribute;
4. *Citizenship of the client's world* when they move as a beneficiary to the background of their own awareness. Here they are concentrating on their duty of care to uphold the rights of the client. This is a representative position, with the professional bearing responsibility for the client's welfare; and
5. *Citizenship of the wider world* when both the IT professional and their formal clients recede to the background of their awareness as beneficiaries. Here the professional is concentrating on upholding the rights of humanity in general. This is a surrendered position, with the goal being to do the right thing in terms of humanity's needs, the professional accepting any resultant negative consequences to themselves.

Practical examples given by the participants indicate that they experience ethics in these ways and help illustrate their meaning. With respect to *Citizenship of my world*, the CEO of your employing organisation may require you to deliver a software solution before it can be exhaustively tested. If you are building a career and want to stay in your job at that company then you may need to comply with that directive. With respect to *Citizenship of the corporate world*, as a security officer you may have access to corporate systems and intimate knowledge of how a company operates. You are expected to not use that information for personal gain or to negatively impact the company itself. With respect to *Citizenship of a shared world*, when working with a client and specifically when drawing up a contract, you should not only limit your liability if something should go wrong but also set up a mutually beneficial relationship. Such a relationship would include each of you alerting the other if you suspected that the system being developed may cause harm to the other party. With respect to *Citizenship of the client's world*, if you are approached for assistance by a client, you should actively seek out an understanding of the client's actual needs. This means asking questions about the problems encountered and the expected

solution, rather than just doing what the client directly asks of you. With respect to *Citizenship of the wider world*, you should seek to contribute positively to society by enhancing people's lives. This may mean refusing to work for organisations that contribute to activities which you think are harmful, for example gambling or warfare.

The citizenships are described in greater detail in the following sections.

4.1. Outcome space of IT professionals' experience of ethics

The *outcome space* in phenomenographic description represents succinctly the experiences found in the group studied and how they relate together. The main function of the outcome space is to show the relationships between the categories.

The outcome space of IT professionals' experience of ethics is represented diagrammatically in Figure 4.1. This illustrates, moving outwards from Citizenship 1 to 5, IT professionals' expanding awareness of what it means to be ethical. Each citizenship progressively encompasses the previous citizenships and exerts an influence over the citizenships that lie within its purview.

The key characteristics displayed in the model are explained in more detail from section 4.2

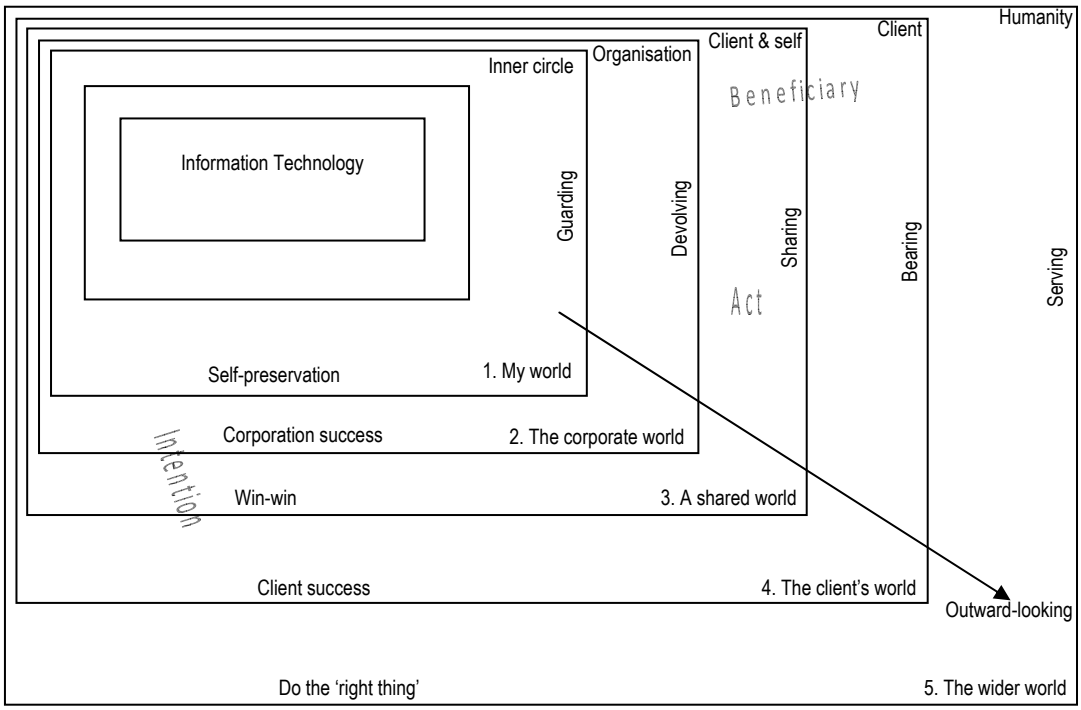

Figure 4.1 Outcome space of IT professionals' experience of ethics

onwards and displayed in summary form in Table 4.1. This representation follows the understanding of the constitution of experience as outlined in chapter 3 and illustrated in Figure 3.5 and Figure 3.6. The internal horizon of the direct object is identified as the "Beneficiary" and is included in the model in the top right-hand corner of each citizenship rectangle, for example the organisation being the beneficiary in *Citizenship of the corporate world*. The internal horizon of the act is identified as the "Act" and is included on the right-hand border of each citizenship rectangle, for example devolving being the act in *Citizenship of the corporate world*. The internal horizon of the indirect object is identified as the "Intention" and is included on the lower border of each citizenship rectangle, for example corporation success being the intention in *Citizenship of the corporate world*. This level of detail serves to show the expanding nature of the experiences as they progress outwards.

The outcome space is introduced at this point in the description to offer perspective on how the categories progressively expand, from left to right, from a practitioner-centred outlook to a more other-centred outlook. The movement towards greater other-centredness is evident in the change in perspective concerning the Beneficiary, Act and Intention. The Beneficiary expands from the professional's inner circle, through the organisation and client, to humanity. The Act expands from guarding, through devolving, sharing and bearing, to serving. The Intention expands from self-preservation, through corporation success, win-win and client success, to doing the "right thing". These increasingly embrace others. The outcome space, then, offers a means of conceiving comprehensively IT professionals' experience of ethics.

The expanding nature of the categories may also be visualised in Figure 4.2 where the continuum from *Citizenship of my world* to *Citizenship of the wider world* is represented in graphical form. Each point in the figure (labelled 1 to 5 and rising diagonally from left to right) corresponds to one of the citizenships experienced by IT professionals, from *Citizenship of my world* (1) on the bottom left to *Citizenship of the wider world* (5) on the top right. An increasing prioritisation of others' rights, represented on the vertical axis, matched with an increasing acceptance of responsibility for others, represented on the horizontal axis, indicate an increasingly other-centred orientation, represented in the points running diagonally through the figure.

IT professionals' experience of ethics may thus be understood to lie along a continuum, with the professional progressively broadening their scope of engagement with others. As a result, they accept that their rights diminish as others' rights are accorded increasing priority and their responsibility expands as it is defined in terms of others. This dual change of experience of rights and responsibilities is represented in the ensuing analysis in the dimensions of variation, with rights increasingly accorded to others and responsibilities increasingly defined by others' needs.

Each citizenship in the continuum represents a qualitatively different way of experiencing ethics. Movement into a citizenship which lies further along the continuum signifies a definite experiential change which crosses a perceptual boundary. The experience of ethics is thus represented in five distinct citizenship categories, along an increasingly other-centred continuum.

The usefulness of the representation of experience in discrete units is its ability to reveal critical differences in experience which may become objects of our attention, either as

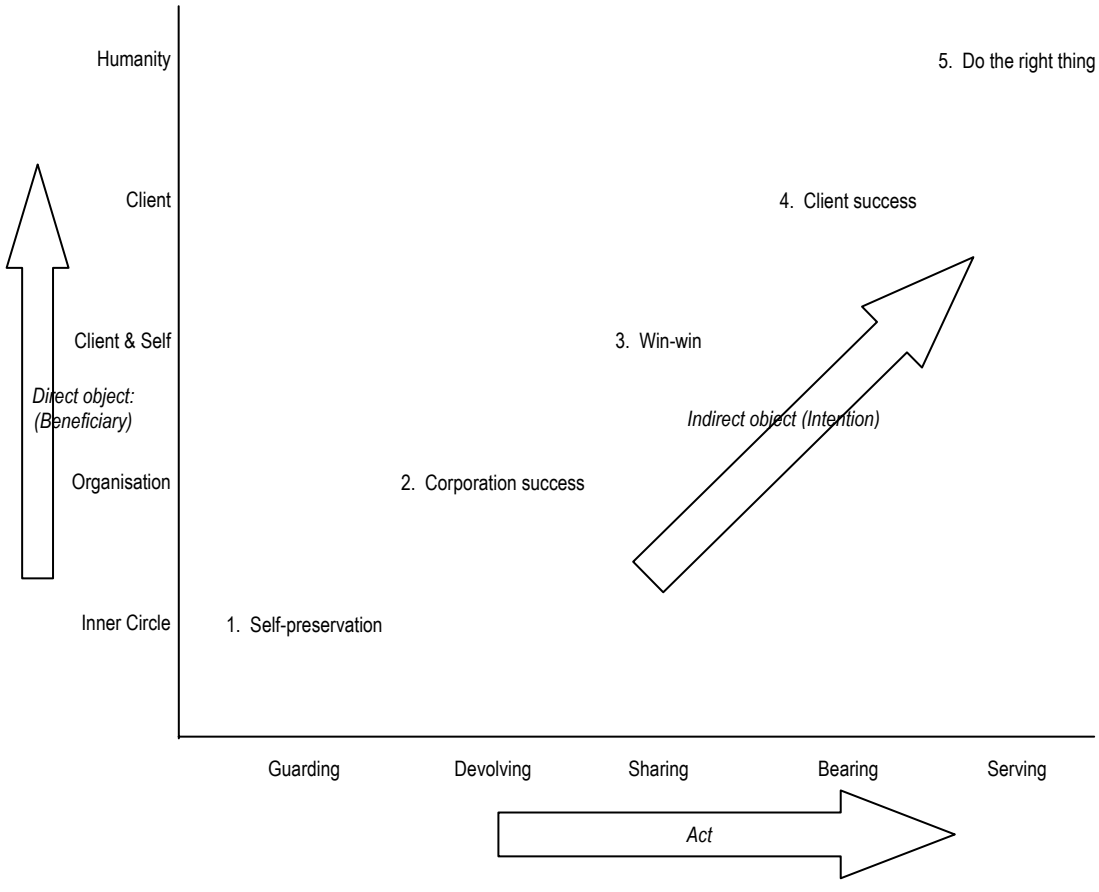

Figure 4.2 Graphical representation of IT professionals' experience of ethics

reflective professionals or as supporters of professionals. These aspects of ethical experience could otherwise be overlooked and left undeveloped.

The representation here of ethical experience along an other-centred continuum is consistent with the measure of other-centredness presented as an ethical ideal in chapter 2. Other-centredness recognises the primacy of other people when defining the nature of ethics in general and when defining the ground of professional ethics in particular. According to such a view, an ethical perspective places others at the centre of our world, instead of ourselves.

Following this reasoning, the key to understanding the critical differences between the citizenships is the extent to which IT professionals willingly accept that their rights and responsibilities are defined in terms of others. For example, an IT professional may choose to work late in order to complete the testing on a job due to be delivered the next day, rather than simply sign off on the project at the end of the afternoon. The professional thus allows the client's right to receive a properly tested product to limit the professional's own right to a full night's rest. The professional also allows the client's needs to define the scope of their responsibility. Rather than just working the regular day formally required by their employer, the professional accepts the extra hours and allows responsibility for the client to fall on their shoulders. Naturally, we preserve our own welfare, preferring to define our own rights (where we benefit most) and our own responsibilities (where we bear the least responsibility) - taking an ethical perspective challenges both of these attitudes and requires a significant change of perspective.

The progression from *Citizenship of my world* to *Citizenship of the wider world*, then, represents a dual attitude change, with respect to rights and responsibilities. This change moves from a relatively closed circle of interest and engagement to a more open one. The professionals' awareness of others in their world expands as they move through the citizenships. This is not to imply that *Citizenship of my world* is unethical, however increasing recognition of and response to others' needs is understood here to indicate an increasingly comprehensive understanding of what ethics is about. From this point of view, consistent with a phenomenographic understanding of the structure of experience, an ethically mature IT professional is one who has in their portfolio the full range of citizenships characterized in this account.

It needs to be noted that the citizenships do not represent stages of development but an increasingly sophisticated understanding of ethics. Citizenship 1 is not left behind when a professional experiences Citizenship 2, but their experience of Citizenship 1 is modified by their experience of Citizenship 2. The citizenship experiences of ethics are thus understood here to be cumulative, so a professional who experiences ethics as *Citizenship of the wider world* will also experience ethics as all the other citizenships. However, each citizenship sheds light on the citizenship(s) preceding it. Therefore, when a professional experiences ethics as *Citizenship of the wider world* they will experience ethics as *Citizenship of my world* differently to a professional who is not experiencing ethics as *Citizenship of the wider world*. In other words, each subsequent experience illuminates the previous experiences in a new way. For example, when a professional experiences ethics as *Citizenship of my world* they view altruistic acts as a means of salving their own conscience – "you've got to be able to live with yourself, I guess, afterwards. It's all very selfish, really" (Participant 26) – whereas when a professional experiences ethics as *Citizenship of the wider world* they view altruistic acts as fulfilling their responsibility towards other people – "it's about what I want to achieve and what I think that I should be doing to contribute to society and mankind and whatever and I would rather have my skills used in an area which I think is… better" (Participant 13). Therefore, the citizenships represent pervasive changes of perspective on the part of the professional.

At this point the reader has sufficient insight into IT professionals' experience of ethics as revealed through this project to pass directly to chapter 5, if they so desire. Nevertheless, in this current chapter each citizenship is now described in detail, in order to disclose the analysis which resulted in the preceding insights into IT professionals' experience. The outcome space, illustrated in Figure 4.1, may serve as a point of reference as we move through a description of each category. This detailed description is summarised at the end of this chapter, in Table 4.1.

For each citizenship in turn, the referential aspect (or meaning) is described in the introductory paragraphs. The structural aspect is then described, in terms of the direct object (beneficiary), act, indirect object (intention), and dimensions of variation (rights and responsibilities). The relationship of each category with the other categories is then explained.

These descriptions indicate how the categories may be distinguished from each other and how they contribute to our understanding of IT professionals' experience of ethics. They

are illustrated with quotations from the interview transcripts, which include an indication of which interview the quotation is drawn from. (When quoting from the transcripts, *I* indicates the interviewer and *P* indicates the participant, when this distinction is needed. Boldface helps to identify the relevant parts of the quotes.) The indirect object (intention) is not illustrated by quotes, since the evidence has by then already been presented through the quotes in the previous aspects of the category.

4.2. Category 1. Citizenship of my world

IT professionals experience ethics as *Citizenship of my world* when their attention is drawn to their own rights and to the rights of those who they consider to be in their inner circle. The IT professional here feels responsible for the protection of their closest associates.

If competing interests with outsiders arise, then the professional's tendency is to give themselves priority.

> I Yes, whatever decision you take will produce harm in some way or another. Is there a way to see your way through that and figure out what to do?
>
> P I'd like to say I had the answer to that one but… **in situations like that I think what I would do is probably do the minimum amount of harm to me! As I said, there's always self-preservation** (Participant 8)

When IT professionals experience ethics as *Citizenship of my world* they are not focussing on the rights of people outside their inner circle. Their awareness does not extend beyond their inner circle.

4.2.1. The direct object (beneficiary) of my world

The professionals themselves are the main beneficiary of this citizenship. Nevertheless, their concern extends to their inner circle which may include family, friends and close colleagues. This is the professional's intimate world.

Their concern may be for the good reputation, secure job, developing career, regular income or assured safety of the people closest to them. The protection of the professional's inner circle from harm forms the core goal of this citizenship.

4.2.1.1. The internal horizon of the direct object

When experiencing ethics as a citizen of their own world, IT professionals are focusing on themselves and their inner circle. Professionals are concerned here about the survival of themselves and those they naturally care most about.

In this experience the professional's personal circumstances influence significantly their response to ethical concerns. The professional's financial and social security takes high priority.

> as an employee, I think all of your avenues are internal… when it's already at the CEO level, politically **you want to keep your job and maybe grow your career here**, what else are you going to do? I just think it's reality… if I was in a situation where I was comfortable that... my financial and social circumstances would not be negatively impacted, yes, I would go on principle… **If my social and financial circumstances are going to be impacted, then I'd think very carefully about it and I think anybody who says differently is lying**! (Participant 20)

The professional's career is in clear focus here and decisions are taken in the light of their long-term career prospects. Their response to demands from their employer is primarily guided by the resultant impact on their own career.

> in this particular industry there are two things that get you jobs - your security clearance and your reputation. If your reputation is bad you are not going to get jobs… **So, I'm not going to sabotage my career for a company that I work for** and I've always had that philosophy. (Participant 11)

This attitude may extend to the professional's family and friends, and prompts the professional to act in their interests, for example ensuring secrecy to protect friends in the services who are posted overseas.

> you hear stories of so-and-so said something to someone who… may have had a conversation with somebody else and suddenly something that the world wasn't supposed to know about ends up in a newspaper and **that puts your friends who are in a very tenuous situation in another country at risk** (Participant 11)

In this way of experiencing ethics, tensions between competing beneficiaries are resolved by acting in favour of the inner circle. This may take the form of limiting harm to these people or helping them more than others.

> I Yes, whatever decision you take will produce harm in some way or another. Is there a way to see your way through that and figure out what to do?
>
> P I'd like to say I had the answer to that one but… **in situations like that I think what I would do is probably do the minimum amount of harm to me**! (Participant 8)
>
> I'd never ignore it but I'm not sure I'd put myself in the firing line, either - **that's where self-preservation comes in**. (Participant 8)
>
> Part of me thinks honestly I would go with people I know. **I would always try and be... most helpful or nice or I would act in favour of people that I actually like or know**… because the actual knowing someone is so much harder… for me to turn around and do something that could impact them than someone I actually don't know face-to-face. (Participant 21)

The professional in this category sees ethics in terms of their responsibility to preserve their own interests and the interests of those they hold dear.

4.2.1.2. The external horizon of the direct object

When experiencing ethics in this way, the IT professional does not have their organisation, the client or the wider world in view. They do not see beyond their own circumstances and immediate circle.

4.2.2. The act of my world

When experiencing ethics as *Citizenship of my world*, the professional takes a defensive position, guarding their private world from external threats. Specific acts range from avoiding wrongdoing and withdrawal, through to speaking out and escalating concerns above their immediate supervisor.

4.2.2.1. The internal horizon of the act

The professional here guards against risk to their inner circle. This is a protective act, typically seeking to avoid negative consequences.

Actions associated with experiencing ethics as *Citizenship of my world* fall within a wide range, from speaking out to keeping silent. The common goal of professionals in taking these actions is to protect themselves and their immediate circle. This may require escalating an issue above their immediate supervisor or it may mean holding their silence and not causing a scene. Experienced professionals acting in these ways have the advantage of insight into the industry which enables them to navigate to a favourable outcome, however they also have the resulting consequences to their many personal responsibilities to take into account.

> **call it personal making sure that you're not the one that's going to look bad**, if it's your signature that has to go on the piece of paper of course you're either going to go to the client... or if it's your manager who is being… "No, don't do that", go over their head. (Participant 11)

> Ethics is sometimes about doing the right thing but **sometimes it's about affording to be able to do that and living with the consequences**… When you're older and have family and mortgages, etc. And responsibility… when there are some dire consequences for your action… it's much harder to try and do the right thing on occasion. Sometimes it's easier to withdraw from the situation and try not to be involved… even though there is legislation about whistle-blowing… you can just about kiss your job or your career goodbye… that's reality." (Participant 24)

Following your conscience is regarded here as looking after yourself. You need to be able to live with your decision, which may lead to negative outcomes in the short-term but will mean peace of mind in the long-term.

> **you've got to be able to live with yourself**, I guess, afterwards. It's all very selfish, really. (Participant 26)

4.2.2.2. The external horizon of the act

When experiencing ethics as *Citizenship of my world*, the professional does not see outside their private world. Their action is always self-referenced, it does not collaborate with or acknowledge those outside their immediate world.

4.2.3. The indirect object (intention) of my world

When experiencing ethics as *Citizenship of my world*, the professional intends to protect their inner circle. The purpose is to limit negative consequences to themselves and their closest family and friends.

4.2.3.1. The internal horizon of the indirect object

When experiencing ethics as *Citizenship of my world*, the professional focuses on self-preservation. Such self-preservation is seen mostly in terms of not jeopardising their current advantageous position.

4.2.3.2. The external horizon of the indirect object

When experiencing ethics as *Citizenship of my world*, the professional is not motivated to help those outside their inner circle. Thus, their efforts are not directed towards the corporation, client or humanity in general.

4.2.4. Dimensions of variation of my world

Both the rights and the responsibilities dimensions are defined by the IT professional in terms of the good of themselves and their inner circle. Rights are accorded to the IT professional and their inner circle without reference to the rights of others. Responsibilities are defined as providing for themselves and their inner circle.

4.2.5. Relationship of my world with other categories

Experiencing ethics as *Citizenship of my world* is different from the next category, experiencing ethics as *Citizenship of the corporate world*, in that the latter beings to turn the professional's attention away from themselves.

When experiencing ethics as *Citizenship of my world* the professional sees themselves as distinct from the organisation they work for. The professional stands against pressure to conform to organisational expectations if those expectations are perceived to jeopardise the individual's welfare.

> **I'm not going to sabotage my career for a company that I work for** and I've always had that philosophy. (Participant 11)

This contrasts with experiencing ethics as *Citizenship of the corporate world*, where the professional defines the practice of ethics in terms of their role in the corporation.

4.3. Category 2. Citizenship of the corporate world

IT professionals experience ethics as *Citizenship of the corporate world* when they define their ethical responsibility in terms of their formal role in their employing organisation. When they experience ethics this way, responsibilities lying outside their position description are not considered to be part of their professional ethical responsibility. Thus, the professional assumes a limited responsibility.

If competing interests arise, the professional prioritises their role in the larger body over their personal convictions.

> I And if the best practice is contrary to your convictions?
>
> P **I am one voice**… I think you must take the approach where, it is a consultative approach and if I cannot educate the other members in that consultative approach to come aboard on my train of thought, then I have to accept that. (Participant 28)

When experiencing ethics as *Citizenship of the corporate world*, professionals are primarily focussed on the rights of the organisation. However, given the fact that they are employed by that organisation, they are also accorded rights (if indirectly) in this process. Therefore, while their awareness has expanded to include their employing organisation, they are by implication still somewhat personally present in their awareness.

4.3.1. The direct object (beneficiary) of the corporate world

The primary beneficiary here is the organisation, a secondary beneficiary being themselves as an employee. The organisation may be a business entity, a government agency or a private consultancy, within which relationships between individuals are formally defined.

The professional's concern for the organisation is to establish efficient work practices, engender return business, build a good reputation and ensure financial viability.

4.3.1.1. The internal horizon of the direct object

When experiencing ethics as *Citizenship of the corporate world*, professionals are focusing on the organisation. They are concerned about the welfare of the organisation.

The professional's role in the organisation is understood to delimit their responsibility, in terms of what aspects of the organisation's operations they need to pay attention to, what standards they need to apply and whether they have the authority to act. They see their role as fulfilling a specific task and understand their responsibility as being defined by the boundaries of that task.

> if I'm a QA [Quality Assurance] engineer I'm not there to satisfy myself that all the software passing my plate is "perfect", because there's no such thing, **all I'm trying to do is… provide a useful service to my employer**. (Participant 9)

> I'll admit, this one sort of struck me as a bit odd because technically all you've been asked to do… as the information manager, is collect information… **That's your entire part of the project. Whether or not the IT manager can get the project done on time or whatever isn't really your problem**. You're not involved in that part of the project. So, in this particular case I'd collect the information and give it to him (Participant 11)

> I I suppose it'd be very easy to access that even as you're doing your IT role.... So, what stops you from doing that?

> P **I know that by me looking into that… I've stepped beyond… doing my role as IT**… there's no reason for me to click that one step further and access that information, that's not in my job, I don't need to know that. So, that's why I draw the line there. (Participant 23)

Only risks professionals identify as part of their role are seen as lying within their scope of responsibility. A risk they suspect as existing but for which they do not have conclusive evidence because of the limits of their role is considered someone else's responsibility.

> this is just a piece I've overheard, I don't know the outcome of the conversation, to be honest with me it's not an ethical dilemma. I don't know the outcome, **I don't know the full story**… I could be going beyond listening in on a CEO and an IT consultancy manager - **it is the consultancy manager's ethical dilemma at that point** (Participant 6)

Being ethical in this experience includes maintaining a professional attitude. This involves self discipline in making sure they're using their time well, taking their responsibilities seriously and understanding the requirements of their role. It requires maintaining a certain distance in relationships, even with colleagues. It ultimately includes being involved in the business at a strategic and managerial level, for example in setting policy, writing contracts and having a big-picture view of the organisation's goals. This level of involvement distinguishes a professional from a tradesperson and enables a professional ethical engagement in contrast to a tradesperson's obedience to orders.

> I guess one of the things about IT ethics is that, in example one your ethics probably are, "legally you're only required to perform those tests which have been agreed to in the original contract"… I think your ethics are in a way that you are the IT professional and you

> should have been around when the contract was written … The IT professional part is only your skill set… that just happens to be the area that you're good at… you're actually a professional something… you're working for a company and **your… ethical responsibility at the current time is to do your IT professionally**… to actually make it a profession where… you're involved in the business and… a lot of these questions are about an IT that isn't part of business and that's where the problems arise because… they are thought of as "Do this" and… is that an IT professional or is that an IT tradesperson? (Participant 26)

The viability of the organisation is seen here as a primary responsibility of the professional. This may be defined in terms of having a concern for financial savings, reputation or legal standing.

> if that happened in a normal day-to-day shop… **ethically, I should be there to make sure that machine doesn't go down ... and cost the company half a million dollars**. (Participant 6)
>
> the company risks a huge fine from either the Australian government or the US government, I can't live with that possibility, **I'm not going to sign off on your exposure**. (Participant 6)
>
> explain to the CEO of the company or the board of directors that… it might cost the company a little bit of extra money if it takes longer to fix the problem now, but if they implement a system and it falls over within the first six months or it gives wrong data or anything, their reputation's shot and **they will lose any other contracts that they have**. (Participant 11)
>
> **if you identify risks to the organisation or to a process** then you have a duty of care... to your managers to... bring it to their attention (Participant 28)

Good workmanship tends to be viewed here in terms of its influence on future return, rather than as being good in itself. Poor workmanship carries with it the consequences of lost clientele and a poor reputation.

> if you go around doing a half-cut job then you're actually doing your business a disservice.... The repercussions of putting out something that you know is a little bit flaky is actually **going to cost you more in the long run**. (Participant 18)
>
> it's all around continuing improvement and quality assurance… Continuing improvement, if you're looking at continually improving your product, continually improving your processes, then you must continually address those processes and say, "**Where can we… leverage some sort of efficiency, gains, product improvements**? How can we do that?" and the only way to do that is by readdressing those processes and identifying them (Participant 28)

While the good of the organisation is the primary focus in this experience, this in turn influences the good of the IT professional themselves, their colleagues and other stakeholders. Therefore, this experience is closely associated with the professional's own world.

> in terms of future business… that's going to inhibit them coming back or limit the likelihood that they'll come back and do business with your company and **that's obviously your job** and everybody else's jobs and the growth of the company and all those sort of issues… The publicity around something like that and **your association with it** (Participant 20)

4.3.1.2. The external horizon of the direct object

When experiencing ethics as *Citizenship of the corporate world*, the professional does not see beyond their formal role. The relationship with their client is not in view and they do not see themselves as having influence over any impact on humanity in general.

At a certain point in the organisational process the professional's ethical responsibility is seen as fulfilled and they consider the situation to be beyond their influence.

> in terms of my approach… I would clearly document obviously everything that's passed, I'd document all of my concerns, and I'd escalate up my management chain so that they're aware and I've done basically what's in my power. Given my position, I probably don't have direct interaction with the customer, it's probably not my role, I probably don't have that relationship, so I would feel obliged to do what I would consider to be the right thing from the perspective of my job, so I have found these things, I have raised them… **what they decide to do is really out of my control**. (Participant 20)

4.3.2. The act of the corporate world

When experiencing ethics as *Citizenship of the corporate world*, the IT professional sees themselves as acting out of duty. Their actions are delimited by the processes in place in the organisation.

4.3.2.1. The internal horizon of the act

The professional enacts their responsibility in terms of the organisation, and the organisational hierarchy and systems through which action must be taken. The practice of ethics is described as reporting, documenting, referring to policy, consulting with superiors, serving the employer and devolving responsibility to those who have the authority to take decisions. Thus, formal relationships, reporting and documentation dominate this view of ethical practice.

> if you identify risks to the organisation or to a process then you have a duty of care... to your managers to actually identify that risk, bring it to their attention and if they are then responsible for managing that process or managing that organisation then your duty of care has actually been… devolved to them because it is their responsibility to act on that particular risk... **Provided that you have done your job in identifying that risk, addressing possible recommendations**. If they choose to ignore those recommendations then **you have devolved your duty of care to them** (Participant 28)

> in terms of my approach… **I would clearly document obviously everything that's passed, I'd document all of my concerns**, and I'd escalate up my management chain so that they're aware and I've done basically what's in my power. (Participant 20)

The IT professional here sees their perspective as partial and thus insufficient to take an individual stand. Their power to act is also limited and this has to be acknowledged in the short term, with other options for change perhaps possible in the longer term. The limitations of the professional's responsibility seem to be prominent in their thinking.

> You could say to your manager straight up that you don't think they're looking at it clearly, they're not looking at it as a long-term proposition. He may be able to provide an opinion in the negative, say "Don't worry about it, they've got a parallel system." So, that would be what I'd do, **I certainly wouldn't take a unilateral course of action because there is no way to know the big picture**. (Participant 8)

> You don't necessarily win every battle that you take on, you've got to pick your battles and timing is everything. Once the product's out there the CEO might be more receptive to ideas. So, that may be the time to approach it. It's just the politics of dealing with management. **You need to be a little bit astute, you just can't… jump on your high horse every time something doesn't go your way, there's more factors than you're always aware of** and despite how many times you look around at all parties concerned you don't have the big picture. (Participant 8)

In this experience of ethics, the professional's role in the organisation defines their responsibility. Others in the organisation are relied on to fulfil their responsibility in their roles.

> P this one I… struggled with finding any ethical dilemmas… I think from my perspective I'd be happy to hand over the information on the next day if the information that I had was correct... I guess it was their responsibility to make sure, between the CEO and the IT manager, that the accuracy of that was maintained through their systems. So, I don't really see a dilemma for that one in my position, obviously probably the IT manager has a dilemma but… that's up to them.
>
> I They release this data, let's say, and… all of a sudden there's a flood of complaints from people that… they're being contacted with misinformation being presented… Does that help the company?
>
> P No, definitely not, definitely not… But I guess then someone has to stand up and take responsibility for that, **I would have thought someone in a CEO position and… in an IT manager's position would be able to come together to work out the issues** that they have and if I was taking a stance on my own information stuff, I would expect the IT manager to be able to stand up and say, "No, I'm not happy with… what's happening here." (Participant 23)

When experiencing ethics in this way, guidance is gleaned from corporation policy or, failing that, the advice of superiors in the corporate structure is sought.

> Your question was, how will I know what to do, how do I decide? ... **I try for policy first… in the absence of policy, the first thing I do is discuss it either with my boss or with HR**, and say, "I feel this is inappropriate." (Participant 8)

4.3.2.2. The external horizon of the act

When experiencing ethics as *Citizenship of the corporate world*, the IT professional limits their scope of activity in accordance with the role definitions and the processes offered by the corporation. They do not assume a level of responsibility beyond that defined by their role. They do not take personal responsibility for the final decision making. There is a clear point, defined by organizational processes, at which they consider themselves to have fulfilled their ethical responsibility.

> all you've been asked to do… as the information manager, is collect information… That's your entire part of the project. Whether or not the IT manager can get the project done on

> time or whatever isn't really your problem. **You're not involved in that part of the project**. (Interview 11)

Responsibility is thus prescribed. The professional does not see beyond the constraints placed on them by the organisation.

4.3.3. The indirect object (intention) of the corporate world

When experiencing ethics as *Citizenship of the corporate world*, the intention of the IT professional is to protect the organisation. The primary goal when seeing ethics this way is the survival of the organisation.

4.3.3.1. The internal horizon of the indirect object

An IT professional acting as a citizen of the corporate world is focusing on organisational success.

4.3.3.2. The external horizon of the indirect object

The professional acting in this case defines their level of responsibility in terms of corporation goals and is not directly concerned with helping others. As such, the client and humanity in general are not in view when professionals experience ethics in this way.

4.3.4. Dimensions of variation of the corporate world

The rights dimension is defined by the IT professional in terms of the good of the corporation (and the good of the IT professional, by inference), without reference to the rights of others.

The responsibilities dimension is defined by the IT professional in terms of the organisation that employs them. Responsibilities are assigned to the corporate leaders who are seen to bear final responsibility for any decisions taken. Responsibility is assigned to the IT professional in a subordinate sense, as a reporter to their supervisors.

4.3.5. Relationship of the corporate world with other categories

When professionals experience ethics as *Citizenship of the corporate world* they begin to be aware of a world beyond their inner circle, broadening their field of view.

A transition to this way of seeing ethics is indicated when self-interest is moderated by an acknowledgement of others' interests. Thus, the sphere of responsibility which is confined to the inner circle in *Citizenship of my world* is put into question.

> certainly **if you're serving self-interest ahead of everybody else then it's a pretty clear indication that something is wrong**. (Participant 8)
>
> I So what about their past behaviour... would send off those alarm bells for you that "Oh no, this is not someone who I'd trust"?
>
> P ... **a huge factor would be whether somebody gains from doing something that has caused harm or damage to... someone else**… without really any regard for the impact that it's had to them. (Participant 20)

Although others' interests are more in focus when experiencing ethics as citizenship of the corporation, the IT professional is still guided by the implications for themselves. They are still personally present in their awareness.

> P you can maybe have the opportunity to go in and... ask questions around the data validation and that sort of thing and approach it that way but I think to refuse to provide the information sources is just silly, in terms of an employee.
>
> I In terms of an employee… okay, so you see a responsibility that's different from the data itself, in terms of being an employee?
>
> P … I guess when I say in terms of being an employee… **I'm doing my job. I just don't see that there's anything... what's my skin in the game?** [How am I implicated in this personally?] It's quite different if I'm the IT manager and then releasing the product without... being satisfied that the data validation… is there, but as an employee I think… in terms of the timing you're pre-empting something that's not an issue yet. (Participant 20)

Professionals in *Citizenship of the corporate world* only accept responsibility as defined by their organizational role, a primary outcome being that they divest themselves of responsibility for unresolved ethical issues. This category, where the professional's role is defined by others, is not higher on the inward-outward continuum because the ultimate goal is to divest responsibility, not accept it. In contrast in the next category, when professionals experience ethics as *Citizenship of a shared world*, they accept that they share the responsibility for finding a resolution.

4.4. Category 3. Citizenship of a shared world

IT professionals experience ethics as *Citizenship of a shared world* when they see themselves working in collaboration with others for their mutual benefit. The scope of their ethical responsibility is thus negotiable, in dialogue with the others involved.

Competing interests are seen as an opportunity for discussion and mutual compromise.

> the **win-win then is management convinced to walk back in to the customer** and go, "Excuse me, these are our contracted things, our quality engineer will sign off on the contracted pieces and we are legitimate here, but he feels uncomfortable and would like to extend the testing period", which would be a little you win… but you will have to extend our… delivery date for us to deliver a product that we felt comfortable going out the door. I think that's a manageable situation, through dialogue. (Participant 6)

When experiencing ethics as *Citizenship of a shared world*, professionals attend to the satisfaction of their own rights and are aware that others (their clients) also have rights

that need to be satisfied. Although they are here personally present in their awareness, their awareness has expanded to include their client.

4.4.1. The direct object (beneficiary) of a shared world

When IT professionals experience ethics in this way, the benefit is shared between the professional and the client. The arrangement may be expressed in a formal contract, although this contract may be open to negotiation.

The professional's concern is to ensure that they benefit or are not unduly disadvantaged, while the client is also benefited or not unduly disadvantaged.

4.4.1.1. The internal horizon of the direct object

When experiencing ethics as *Citizenship of a shared world*, professionals are focusing on both the client and themselves. They are concerned that a win-win outcome is achieved whereby both are benefitted.

The client is seen here to bear a certain amount of responsibility. Such responsibility may be to make sure the formal contract is comprehensive enough for their needs, or it may be to invest more finances in the project to enable a better job to be done.

> Are your obligations more to your employer or to the person who failed to write his contract correctly?! **Did they go into it with their eyes open? Certainly there's an obligation on their part to do that**… it looks like the customer failed to go in with his eyes open if the tests are inadequate for the job, or maybe they factored that in, maybe… they'll continue to run another system in parallel to this one. (Participant 8)

> you not only want to turn your employer around to throwing a bit more resources out and making it worthwhile to hold off their system release and at the same time possibly involve the client in this process, "Are you fully aware that we've done what you've said but I'm not completely 100% happy with the way it is, you may have to pay more." If that's what gets them going, **there's an element of risk transfer there from yourself to the employer and possibly the client**. (Participant 29)

The client may choose to accept risk in order to gain other advantages, for example accepting less testing for a more immediate, less expensive product. It remains, however, their choice to do so.

> the software development project that I'm involved in right now there is no QA [quality assurance] engineer, it's only two of us coding on a specific application and the QA engineer is really the client. And we give him something... he knows… it's got the possibility of breaking his entire system and **he's willing to bear with the fact that he is able to get software more quickly and more frequently at a less guaranteed level of quality**, or a less guaranteed level of testing and that's something he is happy to do because **it also saves him quite a bit of money** compared with the alternatives. (Participant 9)

> you definitely can transfer risk to someone else, **if that person is willing to take it on**. You would ask them, "Are you fully aware of what you're doing, that if we go ahead with this…?" and they're willing to take it, that's another approach. (Participant 29)

4.4.1.2. The external horizon of the direct object

When experiencing ethics as *Citizenship of a shared world*, the professional is not looking beyond mutual advantage. As much as the professional is looking to the client's advantage, they are also wanting their own advantage to be served.

> I'd say that's my clearest picture of ethics in IT and again it's more of the win-win. **I think we have an obligation to let the customer win and you win. Don't harm yourself but don't harm the customer**. (Participant 6)

Humanity in general is not in view.

4.4.2. The act of a shared world

When experiencing ethics as *Citizenship of a shared world*, the IT professional sees themselves as being in partnership with the client. Thus, both the professional and the client bring contributions and carry responsibilities.

4.4.2.1. The internal horizon of the act

The focus of professionals when they experience ethics as *Citizenship of a shared world* is on sharing responsibility. As such, the practice of ethics is described in terms of dialogue, disclosure, communication, negotiation and collaboration.

Negotiation is a cornerstone of the enactment of this experience of ethics. Thus, the client and professional are able to determine what aspects of the project are important to them, for example timely delivery, resilience or specific functions may all be open for discussion.

> one of the aspects of quality software is timely delivery, not just functioning to specification or resilience to problems but actually timely delivery and so it's... not that it's… ethical behaviour against… non-ethical behaviour, it's that certain parties are emphasising different qualities of the software more than others. ... I think that what is more important than the other will vary depending on the client, the company producing it and the project itself, and really I think… what that's about is balancing different aspects of software quality… as a software development professional, you want to be producing a quality product but **defining and measuring "quality" requires a number of different aspects and those aspects would be agreed upon between the people producing the software and the client** (Participant 9)

Openness and dialogue lay a foundation upon which the sharing of responsibility can be built. Information flow is necessary so all parties know where they stand.

> if there are risks in the system, as a customer... I've paid good money for something, do I then think that there should be risks involved in it? No. Not necessarily that... the company needs to do anything about it, but I think... **the customer should be informed**. It's their call if they want to do anything about it or not. If they're willing to accept the risks, then that's not a problem but they do need to at least be aware of them. Otherwise, they don't know what they're acting on. (Participant 20)

The working relationship with the client becomes one of mutual trust and a working together towards a common goal. The client and IT professional see each other as forming a partnership. This relationship goes beyond a salesperson-customer way of relating. It implies a level of intimacy and engenders a degree of trust.

> So, yes, I believe that... it isn't their organisation's problem but I believe ethically they should alert the company to it, if they've known that this is a problem. And I believe that **that's something that we should do, anyway, just as being a good partner in organisations**. (Participant 22)

> if you know a business well enough or you know the people well enough you feel there are certain things you could table... We have customers here that we could say a lot of things to that we perhaps wouldn't say to other customers, knowing that they'd appreciate our view on something because **they see us as a trusted adviser as opposed to just someone that's supplying a piece of tin** (Participant 12)

> **I can't imagine having a relationship with the company without knowing them, without having a relationship with the client and their employees**, so I'm sure that my relationship would have built with them to a point where it wouldn't have been a sudden "Oh my God, nobody knows this but me" it wouldn't work like that. By the time it came up they would already know it, maybe I wouldn't have gone first to my employer because that does put me in a bind where I have to do what they say, possibly I would have gone first to them, the other people, so that it was all open and they could sort it out... I would hope that the situation wouldn't arise because… I wouldn't keep it to myself and have a quiet little discussion with my manager, I would probably be sitting right next to someone from the company… and we would go "Oh my God, look at this!" (Participant 26)

4.4.2.2. The external horizon of the act

When experiencing ethics as *Citizenship of a shared world*, the professional is not looking beyond the sharing of responsibility. Thus, the professional does not perceive responsible actions beyond those which involve both themselves and their client.

4.4.3. The indirect object (intention) of a shared world

When experiencing ethics as *Citizenship of a shared world*, the intention of the IT professional is to protect each party from risk. The primary goal when experiencing ethics this way is to negotiate a shared responsibility and benefit.

4.4.3.1. The internal horizon of the indirect object

An IT professional acting as a citizen of a shared world is focusing on achieving a win-win situation.

4.4.3.2. The external horizon of the indirect object

The professional acting in this case does not see beyond their shared responsibility with the client, they do not see any responsibility to humanity in general.

4.4.4. Dimensions of variation of a shared world

Both the rights and the responsibilities dimensions are defined by the IT professional in terms of the mutual good of both the client and themselves. Rights and responsibilities are understood to be shared equally between the two parties, both parties are expected to be mutually benefitted and neither party is expected to be unduly burdened.

4.4.5. Relationship of a shared world with other categories

The IT professional's experience of ethics as *Citizenship of a shared world* differs from the preceding experiences in as much as the client now assumes an identity and an active role. This turns the professional's view more outward, beyond their immediate environment.

A transition of experience from *Citizenship of the corporate world* to *Citizenship of a shared world* is indicated when the limits of loyalty to the organisation are perceived. Thus, the professional's view is widened from their own world and the organisation's world to acknowledge responsibilities that lie further afield.

> I guess "responsible" is... if you're employed by the State Government, you are making decisions not to your benefit and not necessarily to the benefit of the agency as such but it's to the benefit of the public. So, **you're not making decisions that will unfairly skew the results in your favour** (Participant 29)

When organisations focus on making profit, they are considered by some to be hostile territory for IT professionals who wish to be ethical. Some IT professionals consider it necessary to put such organisational goals in question in order to protect clients from the corporation.

> P **Organisations I think have... on the whole... subjugated their ethics to making profit and to meeting the "needs" of their clients**… and I think this is evident in what happens today in everyday life, that we have a problem and it's either whitewashed or ignored… until it becomes absolutely imperative that something is done...
>
> I When you said companies were meeting users' needs, you put needs in inverted commas. You want to explain verbally what you meant by doing that?
>
> P I think we have an expectation… as clients that we have needs, that we have requirements… A lot of times those needs or requirements are not essential, they're not things that we actually do really need, they're things that we want rather than need and I think many organisations are now catering to our wants rather than our needs and that's what I was doing with the inverted commas... We're often pushed into believing that it is a need rather than a want. (Participant 22)
>
> I hate to say this, but sometimes ethical people will have a hard time in some places… developing their careers because **they will do what is the right thing and the people above them will say, "Well, you didn't do what's… the absolute best for the organisation."** Whereas, they might have done the right thing for everyone around them and in the organisation as a whole, that short-term… we could have made a dollar here and you passed that dollar up (Participant 24)

When client needs come more into focus, professionals expect to favour them before the organisation and challenge the corporation to give up some of its profit margin. It may be possible for the professional to find a way of doing this without overly jeopardising their own position in the organisation, such as planting a thought in their client's mind then leaving it up to them whether they follow it up or reporting the situation objectively to their superior then leaving it up to their superior to act.

> Well, I think... you might try and influence the customer in a way to... do some kind of acceptance testing on the product. So, you might say, "Well, we'll set up a test for you..." **And you might run the risk of doing that in front of the salesman and the salesman might say when you're finished, "Why did you say that? We shouldn't be testing that product because we know it's not going to work."** But once you plant that seed in the customer's mind, that might be part of the overall process and that might bring pressure to bear on the right people in the business to actually say, "Well, we need to sort this out before we can go ahead with that." So, I think there are subtle things you can do like that to perhaps try and bring pressure to bear internally, if you couldn't fight it within your own organisation. (Participant 12)

> I guess if my manager has said, "This isn't your problem"… I would do my best to point out to the manager that it was our problem… depending on what sort of career longevity I thought I is going to have, I might point out exactly why they were wrong! But **more than likely I would do what I felt I needed to do within the organisation, say, "Here is the issue, here is the risk, I'm presenting them to you", I'm going to do it by e-mail or whatever so there is some record that demonstrates that I've done the right thing as an individual correctly**. If my manager chose not to do anything with the information… I guess it would depend on how critical it was to the organisation, whether I'd go around them or over them, I've done that in my career, I've gone around people and over them when I didn't think I was getting a fair deal or I didn't think a customer or a client was getting a fair deal (Participant 13)

Some IT professionals expressed scepticism about corporation ethics and suggested that for organisations to be ethical they depend on individuals in them to take a stand. Good ethics may be represented to the organisation as holding an advantage for them, however this argument is seen as a bargaining tool in order to get ethics enacted rather than company advantage being an ethical end in itself.

> I think in some of them the ethics as such should be identified as personal ethics, rather than perhaps company ethics… simply because... **I find in today's marketplace where the… profit of the organisation is the driver, that company ethics are something that often fall by the wayside and… ethics are often determined by people's personal ethics rather than a company's ethics**. (Participant 22)

> I the reputation of the company, you're separating that… from what it is to be ethical, by the sound of it. Do you want to talk about that a bit? Is there a difference there?

> P … There can be a difference, because… it's obviously a private company and… money is often the bottom line, the dollar is the bottom line. In this case **I would use the argument of "It's going to be bad for the company" as a way of... arguing to get what I consider an ethical decision… made**… I think there is a difference and that purely would be my excuse as to how I would argue against it. (Participant 21)

The pressures of corporate citizenship are considered to be dangerous for young professionals who want to be ethical. Young professionals' lack of experience means they have difficulty assessing the legitimacy of workplace demands and they are likely to accept

whatever they are instructed to do. They may also be eager to build a financial or career base, or are not aware of their legal standing, and so are less likely to oppose organisational leadership.

> **as a young person in the IT industry... you don't know how it all works**… and so you come in and you just, "Oh, this is the way we do it…" And it's not until you get maybe a bit jaded or whatever that you... can see the bigger picture... and then I think ethics probably comes into play more, because you're strong enough to say, "No" and push back… "I don't like this" and off you go. (Participant 18)

There is a concern in this category that formal contracts are written to reflect an expectation of mutual responsibility, to the advantage of all parties involved. This is a significantly different perspective to the previous category's "buyer beware" type of policy. As such, contracts would recognise the rights and responsibilities of both parties and not advantage or disadvantage one of them above the other.

> P I would hope that… if you were working for a proper company that does things right… the contracts would be different…
>
> I What do you think that they would include if they were better written?
>
> P You know the clauses about transferring all responsibility and those sort of mucky ones… hopefully, the alternative side to that is that... **we are in this together and anything you notice that will harm us you should let us know and anything we notice that will harm you we will let you know**… those parts I think don't really exist today. (Participant 26)

In *Citizenship of a shared world* the client is given more prominence than in *Citizenship of the corporate world*, however the client is still seen as bearing some of the responsibility and this lightens the professional's ethical burden. In contrast, in the next experience of ethics the client is not expected to assume any of the ethical load, rather the load falls squarely on the professional's shoulders.

4.5. Category 4. Citizenship of the client's world

IT professionals experience ethics as *Citizenship of the client's world* when they exercise duty of care for their clients. In this capacity they see themselves as representing clients, actively seeking their benefit.

> It means… to me that **I… take into consideration the people that I'm dealing with**, because IT is often very confrontational to people, the changes that we bring in... to be very aware of... the difficulties that they... often are facing (Participant 22)

When experiencing ethics as *Citizenship of the client's world* the professional is not focussing on their own rights. They are also not focussing on their clients' responsibilities. This indicates a significant change from the previous ways of experiencing ethics. The client assumes a central place in their awareness and the professional is not personally present in their awareness as in the previous categories.

4.5.1. The direct object (beneficiary) of the client's world

When IT professionals experience ethics in this way, they see themselves as caring for the client. Regardless of the content of any formal agreement, the professional ensures the client is well served by their IT system.

The IT professional accepts responsibility here for the client's interests, even taking the initiative and offering advice when the client is not aware that it is needed.

4.5.1.1. The internal horizon of the direct object

When experiencing ethics as *Citizenship of the client's world*, professionals are focusing on the best interests of their client. They are concerned that the client is benefitted in the best possible way. This may mean referring the client to another professional who is more skilled to meet their need. An organisation or supervisor who does not adopt this attitude is considered ethically suspect.

> **if I'm asked to do something and find that I'm not really the right person for the job then I would say, "Look, find someone else, I'm not the best person for that."** I consider that a matter of honesty, of being frank about my capabilities and the capabilities of others, so "Look, if you want that done go to this guy, or go to that guy", and I think behaviour like that will actually come back and benefit me later, because people will know that they can rely on me to be honest and to tell them the way it is without fearing that I'm just going to say, "Oh yeah, I'll take that job" because I need the money. (Participant 9)

> if... **you're working for someone that doesn't want to protect your clients… then you'd call into question the company you're working for**, or the person, it might be just the person you're working for. (Participant 29)

An aspect of this perspective is taking the client's view, looking beyond the system itself and enabling the client to see the business application for their IT system.

> **the importance is to understand that... the technical… understanding of IT is not the be all and end all of IT**, there has to be a practical way of relating that IT into the business world and... to make IT understandable for everyone (Participant 29)

When considering their responsibility towards their clients, IT professionals judge the clients' expectations to be more important than formal contractual arrangements. Meeting contractual obligations is only useful in so far as it also meets the client's expectations. The focus turns from the contract to the client.

> P … to satisfy the legal things, that is fine but the main thing is it doesn't give… the outcome, what you expect. This means that… you have not done your job properly...
>
> I When you said that it doesn't do what is expected of it, from whose point of view?... Who's expectation is being met?
>
> P … The expectation is… from the customer's side. From the company's side, the product is just the product. **The expectation is from the customer's side. They're expecting these things, and the companies always want to deliver something very close to**

> **that** or if it is possible one hundred percent perfect all the time, if you could… get very close to that, without causing any problem to the customer. (Participant 27)

> there's an obligation on the person, in all of these situations, the person providing the service … to perform or to meet a certain level. And so if there are problems that are inherent in the system that they're developing and the customer doesn't know that even though they might have met their legal requirements about what they were delivering, I still think it goes beyond that and **it's this ethical obligation to do what is necessary to meet that client's expectations**. It's no good building a system that might meet what was specified to the letter but if it still doesn't work for them or if it's still going to cause them problems, then you've got an obligation to address those. (Participant 2)

> rather than coming in here and saying, "If the contract said yes or no or whatever", I would rather not even focus on that and say, "These are the issues, let's understand the business issues and then we can go and… obviously the contract is part of the business issues, but let's look at the risks, costs… those sorts of issues… and then see if the contract's going to help us or hinder us in solving the problem." But yeah certainly **my approach is… not to be bound by… "We have to do this thing because the contract's going to let us get away with it"… I don't think that's appropriate.** (Participant 13)

In meeting their client's needs, the special insights afforded by the IT professional's knowledge of the client's systems puts them in a position to offer advice even when the client is not aware that such advice is needed. The professional's desire is to help the client in the best possible way and look out for their interests, including protecting them from hidden risks. The basis of the professional's ethical practice is their close relationship with their client and the trust the client has in the professional to be looking out for their best interests as a client.

> we have very good relations with a lot of our customers and we're very proud of that... and because we have that relationship we have a lot of internal knowledge about the way they do things in the business. Now, they may send out a tender document that says, "We want three of these and five of those and we've got to connect them this way", but with your own knowledge you might think, **"That's OK for the tender document but behind the scenes we know that there are extra parts needed or there are things that would work differently" and that's obviously part of the knowledge we can bring to bear in that situation, to say, "Look, we know your business and this is what we recommend."** If a customer is getting to the point where they're blindly implementing something... and we know there will be problems because of our knowledge that we couldn't have known about if we had just been... a cold call, if you like... then I think the same rules apply, we need to say, "Look, you can do this but there are things that you need to know about."... we have to add value for the customer and I think the customer has to perceive that it's a relationship they have... not just a buy/sell based thing... we have to be seen to be looking out for their interests (Participant 12)

> it's par for the course that we talk to the people that we are developing the system for to make sure there's no misunderstanding because those, our clients if you like, will have an expectation that we will cover bases that they don't even think of... We have a perception that we will provide professional expertise that perhaps the client won't even think of. So we need to … say, bring that to their attention and not just do what they ask us to do, but we're obliged to do what they want us to do... They might not know all the questions to ask. **They may not know how to specify everything, so it's up to us to … fill in the gaps. So that, if we're building them a system we don't build them a system according to their spec but we try and build it according to what they actually need to do.** (Participant 2)

The relationship with the client becomes so intimate here that the need to choose whether or not to disclose issues to the client are avoided, because they are discovering the issues

together. This closeness forms the basis for an ethical relationship and makes an ethical response to difficult situations more straightforward.

> I can't imagine having a relationship with the company without knowing them, without having a relationship with the client and their employees, so **I'm sure that my relationship would have built with them to a point where it wouldn't have been a sudden "Oh my God, nobody knows this but me"** it wouldn't work like that. By the time it came up they would already know it (Participant 26)

4.5.1.2. The external horizon of the direct object

The professional acting in this case does not see beyond their responsibility to the client. They do not see any responsibility to humanity in general.

4.5.2. The act of the client's world

When experiencing ethics as *Citizenship of the client's world*, the IT professional sees themselves as bearing responsibility for the client's welfare. The onus is on the professional to contribute for the good of the client.

4.5.2.1. The internal horizon of the act

The focus of professionals when they experience ethics as *Citizenship of the client's world* is on bearing responsibility for the client. As such, the practice of ethics is described in terms of empathy, seeking others' benefit and accepting responsibility for others.

Such care for the client includes investigating their real needs, asking questions about the reasons for their requests in order to determine if the professional knows of a better solution than the one the client is proposing. This requires a humble attitude and a willingness to make things clear for the client.

> And I think also in terms of ethics… somebody comes to you and says, "Okay, I want this. This is my solution I want."… **I'd actually be trying to talk to them a little bit further and say, "Okay, this is your solution. What's the issue you're trying to solve?"** and try and just make certain that their solution is actually what you would consider to be the solution for their problem because if you can get to the root of the problem… you might find that okay you have put up one solution, but there are other solutions, oh, and by the way, you might like this solution better than the one that you've come to me saying, "This is the one that I want." (Participant 24)

> IT professionals… make decisions… without perhaps communicating well with their customer and client and with non IT professionals… and there's a certain amount of arrogance involved… And **I think that is a little bit of an ethical thing in that they are making a decision on what is best for their client or the person without really investigating... what is behind everything.** (Participant 24)

When caring for the client, the professional accepts that they need to be accountable to the client, for example for their use of the client's resources.

> **We are playing with the public's purse strings here in the public sector… we do have to be accountable...** we have to ensure that the decisions that we make on how we actually spend public money… is in the best interest of the public (Participant 28)

4.5.2.2. The external horizon of the act

The professional acting in this case does not see beyond bearing responsibility for the client's welfare. They do not see themselves bearing responsibility for humanity in general.

4.5.3. The indirect object (intention) of the client's world

When experiencing ethics as *Citizenship of the client's world*, the intention of the IT professional is to protect the client.

4.5.3.1. The internal horizon of the indirect object

An IT professional acting as a citizen of the client's world is focusing on enabling the client to succeed.

4.5.3.2. The external horizon of the indirect object

The professional acting in this case does not see beyond their responsibility to enable the client to succeed. They do not see their responsibility as being to enable humanity in general to succeed.

4.5.4. Dimensions of variation of the client's world

Both the rights and the responsibilities dimensions are experienced by the IT professional in terms of the good of the client. Rights are accorded to the client who the professional has an established relationship with and who they know quite well. Responsibilities are defined in terms of the best outcome for the client. The professional may bear some risk for the sake of the client.

4.5.5. Relationship of the client's world with other categories

The professional's experience as *Citizenship of the client's world* differs from the previous experiences in as much as the client's interests are given priority over the professional's own interests and the interests of the organisation.

A transition to this experience of ethics is indicated when meeting client needs requires the professional to focus on the client's needs rather than on contractual guidelines. Here the

professional expects more engagement on their own or their organisation's part, on behalf of the client.

> We have a perception that we will provide professional expertise that perhaps the client won't even think of. So we need to … say, bring that to their attention and not just do what they ask us to do, but we're obliged to do what they want us to do... **They might not know all the questions to ask. They may not know how to specify everything, so it's up to us to … fill in the gaps.** So that, if we're building them a system we don't build them a system according to their spec but we try and build it according to what they actually need to do. (Participant 2)

Although it is not the professional's goal here, some longer-term benefit may well accrue to them from their actions as a citizen of the client's world - good ethical practice engenders trust, encourages clients to return and avoids certain costly consequences. In the next category there is no obvious return to the professional from their ethical "investment".

4.6. Category 5. Citizenship of the wider world

IT professionals experience ethics as *Citizenship of the wider world* when they serve the community which lies beyond their contractual agreements. Thus, they take into account the needs of people with whom they don't necessarily have a formal relationship but who could benefit from their services.

> **The reason I work in education and research is because it's something that I value highly, something that I believe I'm contributing to the well good of man.** .. it's not like making a bank more profitable is a bad thing or an unethical thing to do by any stretch of imagination. .. But it's about what I want to achieve and what I think that I should be doing to contribute to society and mankind and whatever and I would rather have my skills used in an area which I think is… better (Participant 13)

When experiencing ethics as *Citizenship of the wider world* professionals are aware of their burden of responsibility for others and they are not focussing on their own rights. This may result in negative consequences to themselves, but they accept such consequences as the result of being ethical. The professional has receded to the background of their awareness in this category and humanity has assumed the central place.

4.6.1. The direct object (beneficiary) of the wider world

When IT professionals experience ethics in this way, they see themselves as upholding the rights of people outside their own commercial interests.

The IT professional here accepts responsibility for those beyond their clientele, including the interests of humanity in general which may be affected by their work. The professional consciously situates their work ethics within a broader context than their inner circle, their

organisation and their formal clients. They are also ready to relinquish their own rights for the sake of others.

4.6.1.1. The internal horizon of the direct object

When experiencing ethics as *Citizenship of the wider world*, professionals are focusing on humanity - how it is influenced by IT and how it may benefit from IT.

Such a perspective guides the professional's choices regarding the nature of their work. They may choose not to accept work that they perceive to be detrimental to others, or they may choose to engage in work that they think is beneficial to others. Examples of activities that are seen to have a negative social impact are those contributing to privacy violations, gambling and military operations. Examples of activities that are seen to have a positive impact are those relating to education and provision for the needy.

> My ethics have caused me at times to pursue certain paths in my career, so they've been an influence on my choices… particularly of who to work for and what to work on, for example **I... once responded to a job ad and I found out... that the job was with a company making gaming machines and I decided to decline to even go for an interview because I… didn't feel it'd be ethical**… I am philosophically opposed to gaming machines because... I have plenty of exposure to the dark side of that and not much exposure to anything good coming out of the industry… It's a fairly comprehensive and settled opposition to the entire industry, essentially. (Participant 9)

> there's just so much information about everybody out there and in Australia it's not that bad... in the US… the information that people can access just on the Web blows my mind… **Do I really want to be contributing to people getting access to information that they shouldn't have? Probably not.** (Participant 20)

In order to pursue such projects, it may mean the professional questions what the majority regard as normal, for example they may question current business practice. This may bring them into conflict with those who want to maintain the status quo. For example, they may support the free software movement or leave an organisation which is too profit-driven.

> P One of the things that I am very passionate about is freedom in software development and software use... **I will frequently recommend things to people… on the basis of my ethical opposition to the industry… "trend" I guess it would be called that is very much tending towards corporate control of end users' use of their computers**… those are things that very much get me… agitated, from an ethical perspective, because I feel that they are detrimental to the consumer and detrimental to the everyday life of people who don't even realise that their freedoms are being eroded... Most people would expect when they buy a book, that the book is theirs to do with what they want. It's a physical item and so if they want to burn it, if they want to use it as a doorstop, if they want to stick it up on their shelf just to look good, all of those things are legitimate, whereas typically the way software is packaged… all of your rights are explicitly withheld... whereas free software tends to give all of those freedoms back to the people needing the software… I think it stems from a very different value system to most of the corporate world today...
>
> I I guess one of the big cases against that is the business case for making money and getting return for investment, do you have a response to that?

> P Only to say that it is a very different value system… and I think, **part of my attraction to it is that it... turns the IT industry back into a services-based industry, where you get paid for the time and effort you put in and not for the results of that time and effort that then you can use over and over again to make money at no effort to yourself.** .. I don't think that that model takes into account the disparity between the rich and the poor in our world today, I mean when three billion people apparently go to bed hungry each night I don't think large corporates have any excuse for trying to wheedle the last cent out of you and me. I think that money can be put to far better uses. (Participant 9)

> **What would I do? I think I'd tell the CEO to stick it… Why would I tell the CEO... ? Ethics, a moral stance, all of these things… at some point... we're so driven by bloody time and money, and all of these crazy drivers in the business world…** to the point where things just, out it goes... and we're such consumers of things that we're willing to… overlook things or turn a blind eye… But if you don't agree with something, you need to take a stand. I think that's important… otherwise, you're just selling out, in a sense (Participant 18)

This view effects how professionals operate their business, for example maintaining accurate reporting in their internal business processes rather than inflating their sales figures. The professional may also voluntarily limit their activities even if they are technically permitted to engage in them, for example not looking at personal records, because they believe they should respect privacy.

> if you work in a company that's a going concern and they have accounting periods and… within those accounting periods you have targets to make, financial targets… there's a lot of pressure on individuals to meet those targets… you want to make sure, as an employee, that you are doing the right thing by the organisation… these choices of whether this is an ethical thing to do or not is… there's a question mark… you bill for a service that you haven't yet delivered… because you've got to meet these deadlines financially, you bill for something… to meet that financial target and you might do it a little bit later. .. **you're reporting that you're here, when you're not… it's a false set of information**… So, that's what didn't sit right with me. (Participant 18)

> We have... quite extensive information that we gather... and there are... rules around confidentiality about that but as an individual I believe there are certain things that I just don't need to know… So… in dealing with these records... I take it upon myself not to read them, not to open them up... **I have a legitimate reason to be dealing with these piles of information, however I try to limit the amount of information that I gather from them because I believe that they're private things, I don't need to know these things.** (Participant 22)

This may prompt the professional to act to their own detriment, in order to uphold principles they believe are important, for example not taking advantage of another's generous billing, accepting unpleasantness in their interactions with others, receiving less profit and jeopardising their career.

> I looked at the bill, looked at him, gave it back to him, and said, "Take this away, I want you to increase the bill and I want it to reflect a meaningful amount..." **I think… a tradesman is worth… being paid for his time and effort, and he wasn't actually charging me enough**… he would just barely cover the wages he paid, so his own time and his material goods were not actually factored into that bill… So, I refused to accept his bill. (Participant 24)

> **there's a right thing and you do it, no matter how much pain goes with it**, how much unpleasantness. (Participant 8)

> **I believe my… principles are more important than my bottom line** and so it's a value judgment that I make on that (Participant 9)

> **ethical business practices sometimes will cost money** and doesn't always get you the… most profit (Participant 24)
>
> I was told by a senior management person... to write a job description for my offsider… to fit a pay scale and that bore no reflection on the job she actually did. I was on a committee at the time… looking at the revision of pay scales... and things like this and I just withdrew from the committee and didn't write the thing... Needless to say, I think I paid for that in the long run… **I was seen not to be conforming, to be willing to rock the boat and consequently I think I missed out on a job as a result of that** (Participant 24)

4.6.1.2. The external horizon of the direct object

The professional in this case does not limit their responsibility, their responsibility extends to anyone who may be effected by their work.

4.6.2. The act of the wider world

When experiencing ethics as *Citizenship of the wider world*, the IT professional sees themselves as serving humanity. The professional surrenders their rights for the sake of the welfare of the wider world.

4.6.2.1. The internal horizon of the act

An IT professional acting as a citizen of the wider world is focusing on serving humanity. This requires that they accept negative consequences to themselves for their actions, be resolved to see issues through and exercise courage in the face of opposition. This may mean taking a stand on issues they disagree with such as doing work for the military, sometimes in opposition to others.

> **if you don't agree with something, you need to take a stand.** I think that's important… otherwise, you're just selling out, in a sense (Participant 18)
>
> P I was asked to… work on a project for the military… and part of doing that was to get security clearance and all these other things and I kept stalling and stalling and stalling and stalling and putting it off until… eventually my boss at the time said, "Look, what's going on? You've got to go through this process." And **I said, "Well, I don't want to. I actually don't want to do any work for the military."**...
>
> I So, what was it about working for the military that you were not prepared to accept, that you thought was unethical?
>
> P Well, it was... my view that... the military is in the business of... killing people and I didn't want to be in that business at all. (Participant 18)

In order to take such a stand requires courage on the part of the professional to see it through. It generates tension in their relationships with their colleagues and may cause a supervisor to place barriers in their career path.

> I generally like to get on well with everyone… but there's limits, as I said, this is what ethics is about, it's limits and we do what is right… certainly it's a hard decision… if somebody does something wrong, we don't cover it up and that is hard, **it's hard to stand on your dig… it's**

> **not a popularity thing, ethics and popularity are the antithesis of each other, really!** (Participant 8)
>
> I just withdrew from the committee and didn't write the thing... Needless to say, I think I paid for that in the long run… I was seen not to be conforming, to be willing to rock the boat and consequently **I think I missed out on a job as a result of that** (Participant 24)

This action is typically accompanied by the professional reflecting on their practices. Such reflection enables them to learn from experience, keeps their ethical stance up to date and also helps them challenge unhealthy trends.

> P I think I'd be driven mad if I wasn't able to keep up with what was going on, if I just had to rely on other people's input without having been able to think about it myself… **I often spend time late at night or early in the morning just rethinking things that I've done or decisions that I've made or… situations that I've found myself in, and wondering whether I have made the right choices**... what I would change if I had the time again, what I would do differently in the next instance.
>
> I And you're identifying that as a key element in your… laying ethical foundations for yourself?
>
> P I think it's part of it, definitely, definitely. I think people who don't think… perhaps get left behind ethically because either they have the ethics of the 1960s when they were brought up or they lose those ethics very quickly because they accept anything that anybody else says to them and today's ethics I think have some major holes in them. (Participant 22)

The professional's response may be to withdraw altogether from the situation, on the basis that they don't want to contribute to it. Such withdrawal may be from a particular project but also may be from their current employment.

> P Number two… I have a real problem with this one! Because I don't believe in what she's doing, anyway. So, I'd probably have a problem with putting it together in the first place…
>
> I What is it about what she's doing that you don't agree with?
>
> P I believe that people have a right to privacy… and I feel that the total overload that we have from organisations who target individuals by the telephone or by mail or by the Internet is… an invasion of that privacy and I believe that… we should have the right to have a telephone directory and not have someone mine it for that information and then sell that information on. .. **I'm not sure that I would want to be involved with something like this… In fact, I would be looking for other work because this just wouldn't meet my needs as an individual and ethically I don't think that I could do what they require you to do, my own personal ethics.** (Participant 22)

4.6.2.2. The external horizon of the act

Professionals acting in this case do not limit their actions according to the consequences to themselves. They see beyond themselves to the good of others and as such place no boundary on their practice of ethics.

4.6.3. The indirect object (intention) of the wider world

When experiencing ethics as *Citizenship of the wider world*, the intention of the IT professional is to protect humanity.

4.6.3.1. The internal horizon of the indirect object

Such action is typically driven by a conviction about the way things ought to be, for example the way IT business should be conducted or the way people should relate to each other. Principles guide these actions, such as the need to preserve democratic freedom, the need for IT to serve others, the need to benefit other people and the need to protect the weak.

> One of the things that I am very passionate about is freedom in software development and software use... **I will frequently recommend things to people… on the basis of my ethical opposition to the industry… "trend" I guess it would be called that is very much tending towards corporate control of end users' use of their computers**… those are things that very much get me… agitated. (Participant 9)

> it is a very different value system… and I think, part of my attraction to it is that it... turns the IT industry back into a services-based industry, where you get paid for the time and effort you put in and not for the results of that time and effort that then you can use over and over again to make money at no effort to yourself... **I don't think that that model takes into account the disparity between the rich and the poor in our world today, I mean when three billion people apparently go to bed hungry each night I don't think large corporates have any excuse for trying to wheedle the last cent out of you and me. I think that money can be put to far better uses.** (Participant 9)

> I think there are two... principles that are very key for me when I think about things like this, one is the idea... that **you need to always act for the other person's benefit, not your own**, and so true love is not an emotional thing but a conscious choice to act for the benefit of others; and secondly if there are different people who would benefit... then... **the principle of the protection of the weakest should override**, so those who are least able to protect themselves deserve protection more than those who are rich and powerful and able to do many things for themselves. (Participant 9)

These choices may benefit the professional in the longer term, however the motivation prominent in the professional's mind is a desire to do the right thing. The "right thing" may mean telling the truth, respecting people's privacy, treating others with respect, not supplying a product which has a known problem, only charging for the hours you put into a project, meeting customer expectations, being honest about potential problems with a project from its beginning, being concerned about the impact of your actions on others, keeping business dealings above board, contributing to society, completing a project as efficiently as possible, acting in good faith, trying not to do harm to others, trying to act legally and acting in others' best interests.

> if I'm asked to do something and find that I'm not really the right person for the job then I would say, "Look, find someone else, I'm not the best person for that." **I consider that a matter of honesty, of being frank about my capabilities and the capabilities of others**, so "Look, if you want that done go to this guy, or go to that guy", and I think behaviour like that will actually come back and benefit me later, because people will know that they can rely on me to be honest and to tell them the way it is without fearing that I'm just going to say, "Oh yeah, I'll take that job" because I need the money. (Participant 9)

4.6.3.2. The external horizon of the indirect object

The professional acting in this case does not limit their responsibility, their responsibility extends to humanity in general.

4.6.4. Dimensions of variation of the wider world

Both the rights and the responsibilities dimensions are defined by the IT professional in terms of the good of third parties who are typically not known by them. Rights are accorded to unknown third parties who are thus relationally removed, therefore to humanity in a general sense. Responsibilities are defined in terms of humanity's needs. The professional submits to standards which they accept as ethical and bears any negative consequences resulting from the practice of those standards.

4.6.5. Relationship of the wider world with other categories

The readiness of the professional to accept negative personal consequences sets this citizenship apart from the other citizenships.

A transition to this experience of ethics is indicated when, in order to act on behalf of others, the professional comprehensively displaces themselves from the centre of their world. This is understood to be a socially responsible attitude.

> P I think it goes back to a point of understanding whether you, it's more than caring… it's sort of **whether you have this sense of socially responsible, or being responsible, that you're not the centre of the universe** in whatever you do, and who's going to be influenced by your decisions. ..
>
> I What difference does it make whether you see yourself as the centre of the universe or not?
>
> P … If you see yourself as the centre of the universe then you more than likely would make decisions that will benefit you in the situation you find yourself, as opposed to thinking about a longer-term view of things or looking past the benefits that you may gain and the negatives other people may get out of your decision. So, you're not considering those things. (Participant 29)

This experience of ethics stands apart from the others, with regard to the lack of focus on the potential benefit to the professional.

Table 4.1. Summary of the analysis of IT professionals' experience of ethics

			IT professionals experience ethics as citizenship of:	my world.	the corporate world.	a shared world.	the client's world.	the wider world.
Dimensions of variation			Rights are accorded to:	Myself and my own	The corporation - and myself, by implication	You (the client) and myself	You, the known client	Humanity, the unknown needy
			Responsibilities are defined in terms of:	Myself and my own	The corporation	You (the client) and myself	The client	Humanity
What	Direct object (Beneficiary)		Reference	My inner circle	My formal role	Our mutual benefit	My duty of care	Others' rights
		Structure	Internal horizon	Self Inner circle	Organisation [Self]	Client and self	Client	Humanity
			External horizon	Organisation Client Humanity	Client Humanity	Organisation Humanity	Self Organisation Humanity	Self Client Organisation
			Notes	*My reputation, my job, my career, my family's provision, my friends' safety*	*"It's out of my control"*	*"Don't hurt the client and don't hurt yourself."*	*Looking out for the client's interests.*	*"You do the right thing, no matter the cost."*
How	Act		Reference	Defence	Duty	Partnership	Representation	Surrender
		Structure	Internal horizon	Guarding	Devolving	Sharing	Bearing	Serving
			External horizon	Devolving Sharing Bearing Serving	Guarding Sharing Bearing Serving	Guarding Devolving Bearing Serving	Guarding Devolving Sharing Serving	Guarding Devolving Sharing Bearing
			Notes	*"In that case, I'd cause the least amount of harm to me." Avoid negative consequences to self.*	*Document, report, refer to policy, serve employer, save corporate money, protect corporate reputation.*	*Dialogue, disclosure, communication, negotiation, collaboration.*	*"The buck stops here." A champion for the client before your employer. Assume responsibility, empathise, see other's benefit.*	*Acceptance of negative consequences to self, resolve to see it through, courage.*
	Indirect object (Intention)		Reference	Protect inner circle	Protect organisation	Protect each other	Protect client	Protect humanity
		Structure	Internal horizon	Self-preservation	Corporation success [Self]	Win-win Self & client	Client success	Do the "right thing" [Humanity]
			External horizon	Helping others	Helping others	[Organisation] Helping humanity	[Self] [Organisation] Helping humanity	Self [Client] Organisation
			Notes	*"I'm not going to sabotage my career for a company that I work for"*	*"if you identify risks to the organisation or to a process then you have a duty of care... to your managers to... bring it to their attention"*	*"I think we have an obligation to let the customer win and you win. Don't harm yourself but don't harm the customer."*	*"it's up to us to… fill in the gaps"*	*"My principles are more important than my bottom line."*
		Category		**1**	**2**	**3**	**4**	**5**

4.1. Summary of the analysis of IT professionals' experience of ethics

Table 4.1 summarises the description of the category analysis above. The columns in this table which are labelled 1 to 5 at the bottom each represent a cohesive citizenship experience. The elements which make up each experience are understood to be consistent with each other and form a comprehensive understanding of ethics as seen from that point of view. Aspects of these experiences for which there is only fragmentary evidence in the data are indicated in square brackets.

The rows in the table present details concerning the elements of ethics and of experience presented in chapter 3. With respect to the elements of ethics, the table presents the how and what, as illustrated in Figure 3.4. With respect to the elements of experience, it presents the act and indirect object (intention) for the how and the direct object (beneficiary) for the what, as illustrated in Figure 3.5. It presents the structural and referential aspects of each element of experience, as illustrated in Figure 3.6. For example, Figure 4.3 shows the structure of the what aspect of the experience of *Citizenship of my world*. Thus, for the what aspect of the first category the internal horizon (that which is thematic) is the inner circle, which includes myself and my closest relatives and friends. The external horizon (that which is marginal) is the organisation, the client and humanity. This represents the structure of the experience, describing what is figural in awareness and what is marginal. The referential aspect (or meaning) is my inner circle. Each aspect of each category could be represented diagrammatically in this way.

The dimensions of variation, represented at the top of the table, reveal aspects of the experience of ethics which are common across the categories, but which change according

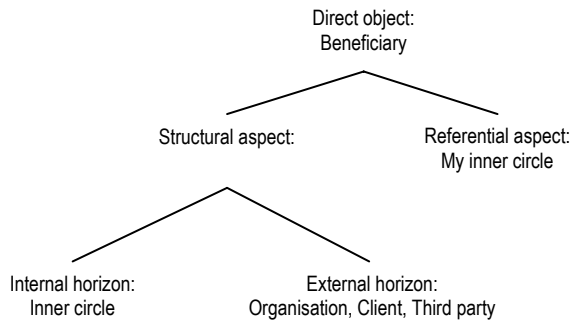

Figure 4.3 The anatomy of the direct object of citizenship of my world

to the category. Thus, they indicate how the categories relate to each other.

4.2. Conclusion

The empirical findings of this study contribute to the pursuit of the aim of this project to help advance the formation and support of IT professionals in the workforce with respect to ethics, by adopting an experience-first approach. Their contribution is explored in depth in chapters 5 and 6.

The citizenship categories were arrived at following the protocol established in chapter 3. The categories are thus understood to faithfully represent IT professionals' experience of ethics.

IT professionals' experience of ethics may, then, be represented as five citizenships. These citizenships lie along a continuum increasingly defined by others, moving from an emphasis on personal rights to a focus on others' rights and from responsibility defined in terms of the professional themselves to responsibility defined by others' needs.

The citizenships are a means of identifying the critical aspects present in an ethical exchange. However, more than one aspect may occur in any one situation. For example, while looking out for their client the professional may also promote the interests of the corporation.

> it's a risk for both the companies who are your end users, so that's again on the moral compass side, the wrong thing to do… **but also** in terms of future business… that's going to... limit the likelihood that they'll come back and do business with your company. (Participant 20)

The more of the citizenships a professional experiences simultaneously, the more sophisticated or complete is their experience of ethics. The transition from experiencing just *Citizenship of my world* through to incorporating the experiences up to *Citizenship of the wider world* involves primarily a change of conception of what it is to be an ethical IT professional. Movement up the hierarchy, from one citizenship to another, indicates that a conceptual boundary has been crossed and a new way of experiencing ethics has been entered into. Such movement embraces the previous citizenships and influences how they are experienced.

Professionals are understood, then, to be practicing ethics at any point along this continuum, however an IT professional with a comprehensive experience of ethics will evidence the full range in their practice. Thus, when an IT professional is ethically mature,

they will not only fulfil responsibilities towards their inner circle, but they will fulfil responsibilities towards their employer, they will fulfil responsibilities towards their clients and they will also fulfil responsibilities towards the wider world.

We now turn in the next chapter to the question of how we might incorporate these observations into our diagrammatic representation of IT professionals' experience of ethics, building on the previous Model of Evolving IT (Figure 2.2) and Preliminary Model of Ethical IT (Figure 2.3), to form a comprehensive Model of Ethical IT.

Chapter 5. Modelling an ethical experience of IT

In this chapter, I develop a Model of Ethical IT which reflects the findings presented in chapters 2, 3 and 4 concerning the experience of IT and IT professional ethics.

The examination of the experience of IT as portrayed in the literature (chapter 2), combined with recent research findings, led to the observation of an evolution in IT towards a focus on information users (section 2.1). This was represented in a Model of Evolving IT (Figure 2.2).

The investigation of the experience of IT professional ethics as portrayed in the IT literature (chapter 2), combined with insights from outside the IT literature, led to the conclusion that for IT professionals to claim to be ethical they need to reflect other-centredness in their practice (section 2.2). This was represented, adding to the Model of Evolving IT, in a Preliminary Model of Ethical IT (Figure 2.3).

The phenomenographic enquiry (chapter 3) into the experience of IT professionals led to a description of professional experience as forming along the dual continua of rights and responsibilities, with rights increasingly being accorded to others and responsibility increasingly defined in terms of others. This was represented in five citizenships (chapter 4).

These insights are now drawn together into a cohesive whole.

5.1. Progressing Evolving IT to Ethical IT

The Model of Evolving IT (Figure 2.2) illustrated a move from a technology-centric view of the discipline to a user-centric view. This movement may be seen as reflecting a conceptual shift from being an IT technician to being an IT practitioner.

The world of IT *technicians*, holding a technology-centric view, is entirely concentrated on the artefact, and its capabilities and demands. Technicians are only marginally aware of the discipline's clientele. In labelling this kind of approach to an occupation as a technician's perspective, I am following the lead of others (for example, Gotterbarn, 2004a; Koehn, 1994).

The world of IT *practitioners* takes one step away from this technology-centric view. It is illustrated in the Model of Evolving IT (Figure 2.2), where IT clientele are identified as "users" of the technology. Such a view, however, implies the pre-eminence of technology, that the user comes to an already existing phenomenon which they essentially have to accept as-is and adapt to as best they can. The role of the IT practitioner is to enable the user to make the most of the technology. The user may change the artefact somewhat to meet their needs, however the artefact embodies the design of the technician and can be changed only within the parameters already built into it. The practitioner's role is to mediate between the user and the artefact, helping them approach each other as closely as possible, within predefined constraints.

The conceptual shift from technician to practitioner may be understood as taking a further step towards others. We have seen (in chapter 2) that a higher view (beyond seeing clientele as artefact users) is not only required of practitioners in the current Information Age (Denning & Dunham, 2001), but that it is the foundation from which they can claim to practice ethics (Koehn, 1994; Levinas, 1998) in a global setting (Schweiker, 2004). Treating users well is ethical but, as IT professionals themselves have revealed in this current project (as shown in chapter 4), there is a more nuanced understanding of who users are and how ethical professionals relate to them. Indeed, a conceptual shift from practitioner to *professional* appears to occur when practitioners stop seeing their customers as users and start seeing them as clients. At this point the client and their needs assume a central place in the professional's conception of their practice. Since this has to do with framing professionals' practice rather than their specific role, the conceptual shift is applicable even if the professional has limited direct contact with the client.

Such a conceptual shift continues into the world of a professional *master*, when professionals see their clients as human beings. On the one hand they recognise that those who approach them for service come to them out of a context which is wider than the immediate transaction being asked of them and on the other hand they open their world to others who have not approached them but who may benefit from their expertise. In this way humanity's needs assume a central place in the master's conception of their practice. The centrality of the user as suggested in the Model of Evolving IT and of the client as envisioned by the professional are developed in the professional master, to include the consequences of IT to the recipients of its outcomes.

I propose here, then, a movement from technician, to practitioner, to professional, to master, which reflects a change of relationship with the IT artefact and the professional's clientele. Thus, a technician provides a technological artefact, a practitioner supports an artefact user, a professional works in partnership with a client and a master serves a fellow human being.

A similar progression has been recognised in the IT literature. The change from technician to professional has been described as adding a commitment to "maximize the positive effects for those affected by computing artefacts" and "moral responsibility and the ethically commendable" to technical knowledge and skill (Gotterbarn, 2004a, p.116). This requires, for example, that the user's needs, rather than their specifications, determine the IT professional's course of action and that the IT professional challenge their employer to pursue the course of action which produces the best outcome for those impacted by their work. In this respect, 7 levels of professional "embodied competence" have been suggested: beginner, advanced beginner, entry-level professional, proficient professional, expert, virtuoso and master. Seen this way, "One's professional career can be interpreted as a journey on a path to mastery" (Denning, 2001b, p.20).

A conceptual movement from technology as central to others as central is argued for in this current account as a movement towards professional maturity.

5.2. Re-conceptualising IT: A Model of Ethical IT

An outward-looking perspective is represented in the Preliminary Model of Ethical IT (Figure 2.3), by the axis shown in the bottom right-hand corner of the figure. This axis may now be informed by the outcome space of IT professionals' experience of ethics, as represented in Figure 4.1. The citizenships signify a change of experience of ethics which increasingly embraces others and their needs. Thus, the movement outward along the axis may be understood to progress through the five citizenships.

Vestiges of a user perspective persist in this continuum and only lose their influence in the last two ways of experiencing ethics. The final level, Humanity, represents a point where the professional's responsibility moves beyond 'users' to human beings, and technological artefacts are designed and implemented with humans centrally in view.

This approach to IT ethics does not focus on specific issues or methods of decision making, rather it focuses on the professional's relationship with others. As I have argued, however,

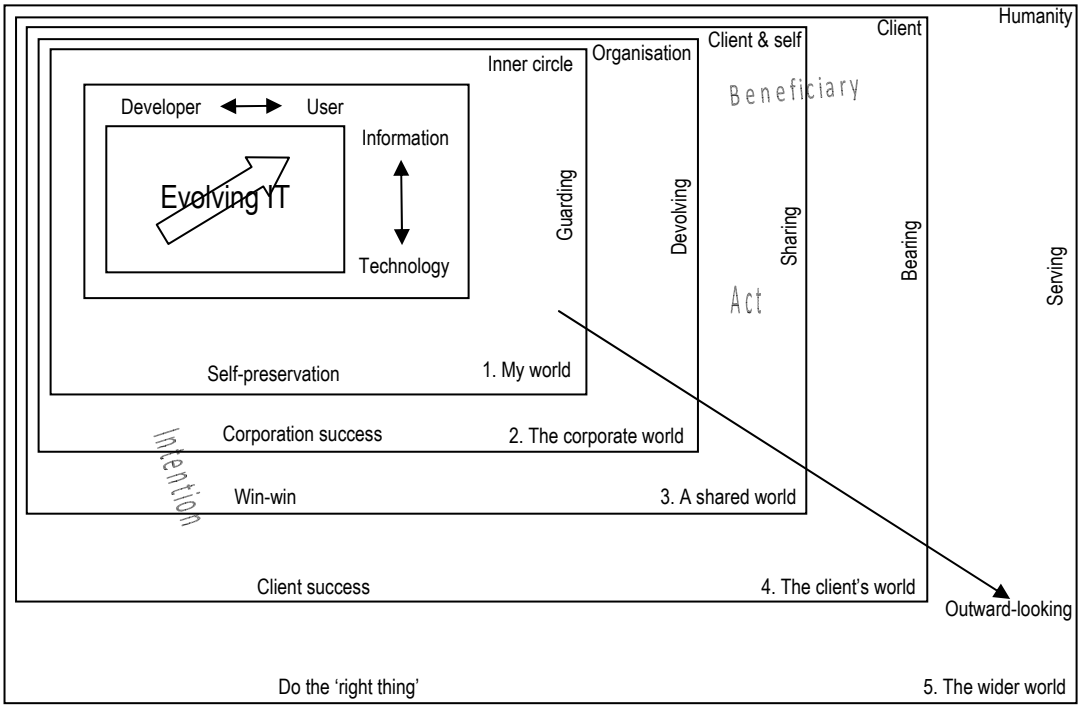

Figure 5.1 A Model of Ethical IT

it constitutes the essence of ethics (Levinas, 1998) and the ground of professional ethics (Koehn, 1994). An IT professional may well possess an intellectual command of specific issues and apply adeptly the skills of decision making but still be oriented towards themselves, and so employ those abilities in ways that are self-serving. The need for an other-centred experience upon which ethical analysis and technique may successfully build is paramount. This emphasises the need for IT professionals who first of all experience themselves and their practice as ethical before the need for IT professionals who skilfully deliberate about ethical issues or manipulate ethical decision making techniques. The latter skills without the former experience risk to entrench already self-centred orientations, whereas the former experience preceding the latter skills may serve to dislodge self-centred attitudes and set the professional on an ethical course.

The Model of Ethical IT (Figure 5.1), then, combines the previous diagrams and indicates a developing relationship between IT professionals and the world in which they work. The Outward-looking axis represents ethical conduct on all its levels. However, as argued earlier, a professional who has a comprehensive experience of ethics will evidence all of the levels in their practice.

The outer layers in this model influence professional practice at the inner layers. For example, professionals experiencing ethics as *Citizenship of the wider world* are aware of

their own needs, however they intentionally set them aside for the sake of others; and professionals who experience ethics as *Citizenship of the client's world* are aware of the organisation's needs, however they risk censure by challenging the corporation to accept additional expense for the client's sake. Thus, the wider world experience influences a professional's answer to the question: "What if a client asks you to exploit other people on their behalf?" The wider world experience also results in the professional including activities in their portfolio that offer no reimbursement but which help meet the needs of the underprivileged.

5.3. Applying the Model of Ethical IT

I have been following throughout this present study a constitutionalist understanding of how knowledge is gained about the world. From this viewpoint, learners contribute to the experience of learning as much as the object of learning itself. Learners' past experience and circumstantial perception of relevance determine how they will understand their encounter with the phenomenon they are facing. This includes IT professionals' encounters with ethics.

From the point of view of a constitutionalist approach to knowledge, significant influence over people is exerted not at a behavioural level but at an experiential level. In other words, our influence over others is most effectively exerted in the realm of their relation to their circumstances.

> Human behaviour is not controlled by structures, systems and prescriptions as such. Instead, it is how people understand those structures, systems and prescriptions that determine their behaviour. (Sandberg & Targama, 2007, p.175)

Influence over IT professionals' practice of ethics is thus best instigated through influencing IT professionals' conceptions of ethics. This changes a leader's role from one of controlling to that of guiding and stimulating understanding.

As previously noted, the enforcement of codes has been observed to exert an influence over employee behaviour. However, what has such enforcement taught practitioners? The lessons learned may actually have been that the corporate environment is a punitive one, that the letter of the law is key and that if behaviour seems to conform to the law then that is sufficient. The enforcement of codes does not need to convey such lessons, however to ensure these perceptions are not imparted, enforcement needs to be accompanied by communication concerning its significance.

5.3.1. A conceptual tool

The *Model of Ethical IT* primarily serves as a conceptual tool, to represent the relationships among people and artefacts in the IT space. It illustrates these relationships in a way that is readily grasped and easily remembered. A diagram can be more effective at conveying such conceptual information than written prose. The model, then, offers a means of interacting with IT professionals on the experiential level.

The model may be used in a strategic sense, to orient activities towards certain goals or outcomes, or it may be used in an operational sense, to evaluate specific actions. It may be usefully employed to:

- reconceptualise the IT professional space;
- plan future directions;
- provide guidance of ethical formation and support;
- define the scope of the IT profession's ethical responsibility;
- provide inspiration for individual and organisational guidelines;
- set standards of conduct and aspiration; and
- aid communication between stakeholders.

This conceptual tool could be used on an individual, group, organisational, professional or discipline level. At the individual level, IT professionals may refer to it in order to conduct a self-assessment of their practice. At the group level, a learning facilitator may present it to a gathering of professionals as a prompt for discussion. At the organisational level, a corporation may use it as a yardstick against which to measure their goals. At the professional level, a professional body may consider it as they formulate visionary statements for their members. At the discipline level, disciplinary leaders may adopt it as a means of envisioning new conceptual connections and future directions.

Our conceptualisations of IT play a key role in the deployment of IT, determining our expectations of it and the way we interact with IT. This indicates the potential power of such a model. Such power can be deployed for the effective ethical formation of IT professionals, following the insights into learning offered by variation theory (section 3.2.9). Variation theory identifies the need to confront new ways of experiencing a phenomenon in order for effective learning to take place. The model may be used as a

curriculum guide, to ensure practitioners in formation have the opportunity to encounter these different ways of experiencing professional ethics.

5.3.2. An instructional tool

The model may be employed as an instructional tool, to stimulate professionals to make the conceptual shifts represented in it. It would thus enlarge professionals' experience of professional ethics.

Activities using the model to engender the expansion of the learner's experience could include:

- presentation and discussion of the range of citizenships;
- self-assessment of the learner's practice against the citizenships;
- examination of case studies of IT professionals representing the range of citizenships;
- involvement in practical projects which expose learners to the range of citizenships; and
- journaling of personal engagement with the citizenships.

The key differences between the citizenships lie in the practitioner's dual experience of rights and responsibilities. These aspects of the citizenships identify fundamental perspectives out of which different behaviours proceed. They specify key educational turning points for ethical training and key elements of variation which need to be intentionally brought into awareness.

According to the interview participants, Levinas, Koehn and others, the most significant variations in ethics are the nuances of relationship between the professional and others. An emphasis on the diversity of possible relationships (as indicated in the citizenships) and personal reflection in the light of that diversity are central to this process. Similar approaches to IT ethics education have been recommended by others.

One suggestion has been the collaborative creation of a code of ethics which encourages a reflective and critical learning experience. It is signalled that this constructivist approach to education contrasts with the cognitivist educational approach which students typically encounter, so it may cause them some confusion. Thus, an early orientation of the learners to constructivism is necessary for them to gain the most for the experience (Stahl, Wood, & Howley, 2004). This would also be true of a constitutionalist approach.

Another suggestion has been the use of an industry-academia joint project to bring differing points of view together in an environment where different stakeholders are forced to communicate and collaborate. This is proposed out of a moral development perspective forwarded by Rest (1986) in which exposure to complexity fosters development. The experienced IT professionals who are included in this project are expected to represent the accepted standard of ethical conduct against which students are able to measure their own ideas (Vartiainen, 2005a).

The central message of variation theory is the need to intentionally focus on variation of experience. The role of the instructor in variation theory is to ensure that the learner's experience is being expanded in ways that are potentially educationally meaningful. It is incumbent on the facilitator to determine what those educationally meaningful experiences are, a task which is aided by phenomenographic investigation which seeks to describe qualitatively different ways of experiencing phenomena. The results of this project provide a framework which indicates the differences of experience which are appropriate for representation in a program of study of IT professional ethics. In other words, it is important that the learners be exposed to each of the citizenships. This does not necessarily need to occur in a progressive way. The main concern is that the learners have the possibility of meaningful contact with each citizenship. Nevertheless, systematic exposure to the citizenships could help learners grasp the expanding nature of the experiences which the citizenships represent.

The citizenship progression may also be used as the basis of a pre-test and post-test. This would draw learners' attention to the citizenships, to the level of their identification with them and to the change in their relationship with them. A pre-test could serve the purpose of orienting learners to the core concepts of the citizenships and to their relationship with them. A post-test could serve the purpose of reminding learners of these aspects of ethics, of directing their attention to their relationship with them and of providing a means of self-assessing their change over the course of instruction. A subsequent question, in the light of these tests, such as "How has your experience of ethics changed and does this appear to be a good thing?" may serve to prompt learners to reflect on any changes in their experience and whether those changes are desirable.

A short survey instrument could serve as a pre-test and post-test tool (for example, Figure 5.2). A strength of this instrument is that it could be rapidly administered and it would allow learners to situate their views incrementally in relation to the citizenships. A

Your experience of IT professional ethics

Mark how you experience IT professional ethics on the scales provided.
This is a self-assessment tool, it is not for anyone else's eyes.

In my professional practice my primary responsibility is to meet my needs, and the needs of my family and friends.	Strongly disagree	----------	Strongly agree
In my professional practice my primary responsibility is to meet my employer's goals.	Strongly disagree	----------	Strongly agree
In my professional practice my primary responsibility is to meet both my own needs and my client's needs.	Strongly disagree	----------	Strongly agree
In my professional practice my primary responsibility is to meet my client's needs.	Strongly disagree	----------	Strongly agree
In my professional practice my primary responsibility is to meet the needs of the wider society.	Strongly disagree	----------	Strongly agree

What thoughts about IT professional ethics has this survey prompted in you? (Note on the back)

Figure 5.2 A survey of learner's experiences of ethics

weakness is that it may lead their thoughts too much, for example by framing their experience of ethics too strongly in terms of responsibility (and rights, which are implied in the statements) and by suggesting the 'correct' answers too obviously. In the light of this, it is probably useful to view this survey instrument at the pre-test stage not only as a means of eliciting the learners' views but also as a means of introducing them to the concepts that are central to the educational program they are embarking on.

The Model of Ethical IT, then, may serve as an overview of the citizenships. Such a model provides a means of encapsulating the main concepts succinctly and representing how they relate. The learners could be asked to devise their own model of ethical IT before viewing this model, then asked to compare and contrast the two models, and to provide a rationale for their preferences. This would serve the purpose of drawing their attention to the phenomenon of professional ethics on a global level and prompt their thoughts on the structural aspect of the experience of ethics. It would also provide a means of contact with learners who relate to diagrammatic representations of knowledge.

Evidence provided by phenomenography suggests that we all start at a global level and progressively situate details in accordance with our global understanding of the phenomenon of our attention (Marton & Booth, 1997). This is the way we make sense of new experiences as we are confronted with them. For example, we will not learn to read and write if we do not first understand somewhat what it means to be literate. Similarly, an IT professional will not be able to make sense of the detail of ethics if they do not first have at least a partial understanding of what it means to be ethical.

A course of instruction based on the citizenships could, after an initial overview, concentrate on the citizenships one at a time. This would provide the opportunity to explore the meaning of each citizenship, the relevance of each to professional practice, how each would be expressed in daily work and how each is related to the others (as they are introduced).

A gambit of activities could serve to draw out the citizenship meanings – case studies, guest speakers, field visits, peer presentations and debates. In addition, in order to engage the learners on an experiential level, a practical project could be chosen by the learners which would provide a stimulus for group discussion. For such a project to offer the range of citizenship experiences it could be conducted in collaboration with a local employer and be offered as a community service. Such a project could meet a community information technology need. The effectiveness of reflection in professional development (Moon, 1999, 2006) indicates the appropriateness of the use of journaling in the learning process, through which the learners could consider their relationship with the citizenship continuum in the light of the demands of their practical project.

5.4. Conclusion

This present investigation has culminated in a Model of Ethical IT which provides a conceptual tool potentially useful for the formation and support of IT professionals as they seek to conduct themselves ethically in their daily practice.

We see here an experience of IT professional ethics and ethics formation which look quite different from many of the experiences found in the literature (described in chapter 2). An artefact developer-centred discipline has been re-oriented towards an information user focus. A practitioner-centred approach to professional ethics has been re-oriented towards an other-centred focus. Ethical formation concentrating on control and moral development has been re-oriented towards a focus on a change of experience.

In the next chapter I consider further the contribution of the concepts behind the Model of Ethical IT, their implications and their association with experience-based formation.

Chapter 6. Contributing to the experience of IT professional ethics

In this chapter I discuss the contributions of this study to IT, IT professional ethics, IT professional ethics education, the research approach and other disciplines. I also consider the study's limitations and offer recommendations for future research.

The primary contribution of this project is an elucidation of IT professionals' experience of ethics. This is underpinned by an experience-based definition of the IT territory and applied to experiential formation. The result is an integrated system, unified through an experience-based approach. This system challenges the traditional approach to each area.

6.1. What does this study contribute to IT?

This study presents an experience-based conceptualisation of IT which is based on contemporary and emerging perspectives. Such an approach includes information users in the scope of the IT territory. Such an inclusion straightforwardly opens IT to ethical considerations, introducing those it impacts unambiguously into its circle of responsibilities. This lays an important foundation for the ensuing experiential approach to IT professional ethics.

6.1.1. An orientation based on information users' needs

IT is presented here as information user-centred rather than artefact developer-centred. Such a distinction is significant because it moves the focus of IT away from its products and towards its purposes. This is an important step in orienting discipline professionals away from a focus on themselves towards a focus on those who are affected by their work.

I argue that the purpose of IT, then, is most appropriately understood to be primarily user-oriented. This lays a suitable foundation for ethical professional practice.

> **I think a lot of the problem with IT professionals' ethics are that they assume a godlike complex** in some ways… where they say, "We know what's good for you… so, this is the answer." Whereas, the reality is IT are enablers… and so when someone comes to them with issues or problems… they should be looking at facilitating rather than necessarily saying, "I know this is what's good for you." (Interview 24)

A technology-oriented view of IT admits little room for the user. This is because in technology-centred practice the client fades into the background, only vaguely present on the periphery of the practitioner's world.

The traditional technology-oriented approach to IT emphasises the centrality of the technological tools (hardware and software) which make up an information system. In this way, goals such as the refinement of processing ability and efficient interface of elements of the system assume prominence regardless of their effect on people and whether they meet a human need. The focus is on technology without necessarily referring to an end user.

If IT professionals experience ethics as people-centred and at the same time experience IT as only technology-centred, then they will perceive IT as being an ethics-free zone since it does not involve people. Ethics and IT are understood in this case to have nothing in common.

> I've done things like sized and bought servers, and evaluated and bought software, but **I don't know that I've ever hit an ethical problem with those, they're purely technical**... if it's purely within IT and doesn't leave IT boundaries I'm finding it hard to think of an ethical issue... then they become technical issues of cost and effectiveness and life cycle and those sorts of decisions (Participant 5)

> if you go into the core of IT there may be an area where there's very few real ethical considerations, I'm thinking **it's more where IT relates to the rest of the world is where the ethical decisions are**, how IT impacts the business or people or other businesses (Participant 5)

Although the participant quoted above acknowledged that this was a tentative view that required further reflection, it indicates a conceptual division between users and IT. This illustrates the importance of considering professionals' conceptions of IT when engaging with professionals' conceptions of IT professional ethics, since they are intimately related. It also highlights the importance of a systemic view of the environment (which includes the field, professional ethics and pedagogy) when considering IT ethics formation.

Failure to adopt a comprehensive view of the territory of IT in designing ethical formation may exacerbate professionals' disassociation of ethics and IT. If training only approaches computing from the point of view of isolated problem-solving events, then it contributes to the view that all IT professionals have to do to fulfil their responsibilities is meet the stated specifications by solving the problem. This point of view is oriented towards the artefact and its formal specification, and fails to consider the user's need. "The crossword-puzzle approach to computing problems [which focuses only on solving the specific problem]

leads to a failure to realize that computing is a service to the user of the computing artifact" (Gotterbarn, 2004a, p.110).

In contrast, in the current study, the conceptualisation of the territory of IT as embracing the user lead participants to reject certain activities as being unethical (for example, military operations and gambling) regardless of the technological level of their involvement. For them the impact of the IT system on the user is clearly part of IT.

> I So, what was it about working for the military that you were not prepared to accept, that you thought was unethical?
>
> P Well, it was... my view that... the military is in the business of... killing people and **I didn't want to be in that business at all**. (Participant 18)
>
> I... once responded to a job ad and I found out... that the job was with a company making gaming machines and **I decided to decline to even go for an interview** because I… didn't feel it'd be ethical… I am philosophically opposed to gaming machines because... I have plenty of exposure to the dark side of that and not much exposure to anything good coming out of the industry (Participant 9)

For these professionals IT professional decisions were contextualised and not reduced to isolated instances of technology problem-solving. These professionals conceptualised IT in terms of a user, even though their potential roles were not necessarily defined in terms of direct contact with a client. When these practitioners are being ethical, such considerations are in the centre of their awareness.

If users are understood to be integral to the IT environment and the role of IT is understood to be that of a service industry, then ethics relating to users assumes a central place in IT professional practice. The suggestion here is that an IT technician who understands this has moved conceptually towards being an IT professional.

6.1.2. A model originating in qualitative data

A user orientation is understood here to entail more than seeking user feedback on technology that has already been developed out of a framework alien to users' experiences. It acknowledges that the task of development for users must engage them at all points, from the earliest stages. Such a thoroughly user-centred discipline requires a raft of inquiry techniques, in particular those which enable insight into non-technologists' interpretations of the world.

> To study the relationship between technology and its users, empirical research methods typical of the behavioral, social and health sciences are required (Finkelstein & Hafner, 2002, p.6).

This study offers an example of the application of a qualitative research method to a discipline which is predominantly served by quantitative research. Even ethical studies in IT

have tended to use quantitative instruments, such as surveys, for data gathering. While such instruments are appropriate for certain purposes, qualitative methods offer alternative insights into IT and the people who engage with it.

Interpretive approaches such as phenomenography approach knowledge in a non-dualistic, non-positivistic way. They require a thorough re-thinking of the insights sought by research and the nature of its conclusions. This alternative approach to the discipline offers a novel perspective and a signpost to new directions into the future.

The qualitative data gathering and analysis pursued by phenomenography strives to give the participants control over the direction and definition of the research outcomes. The structure of the findings are derived from the data and present the opportunity for a more nuanced understanding of the phenomenon, from the participants' point of view, rather than fitting the outcomes into pre-defined categories.

The Model of Evolving IT (Figure 2.2) developed in this study draws on phenomenographic research into IT researchers' experience of IT research (Pham et al., 2005). It represents IT as seen from the perspective of those who are shaping the field and its workforce. This serves to indicate emerging practice in the field, rather than notions of its direction influenced only by traditional conceptions of the discipline.

6.2. What does this study contribute to IT professional ethics?

This present study lays an experience-based foundation for IT professional ethics. Drawing on professionals' experiences, it represents IT professional ethics as people-centred, rather than issue- or method-centred. IT professionals were found to be attuned to the impact of IT on others rather than focussed on specific ethical issues or techniques. This moves attention from the outcomes or processes of ethics and places it on the objects of ethical practice. Such a change seems to be critical because it puts the beneficiaries of professionals' practice firmly in view and defines professionals' responsibilities in terms of those beneficiaries.

The Model of Ethical IT (Figure 5.1) developed in this study represents IT ethics as seen from the perspective of those who are active in the field. This serves to indicate current practice, rather than expectations of ethical practice determined by traditional notions of professionalism.

6.2.1. Orienting the profession towards others

This study's empirical enquiry resulted in a representation of the experience of IT professional ethics in five qualitatively different categories (Table 4.1).

The IT professionals who participated in this study experienced ethics as:

1. *Citizenship of my world*;
2. *Citizenship of the corporate world*;
3. *Citizenship of a shared world*;
4. *Citizenship of the client's world*; and
5. *Citizenship of the wider world*.

These indicate a change of focus concerning the professionals' rights and responsibilities.

In terms of rights, these indicate a progressive focus concerning the beneficiary away from the professional and towards others. In this progression, a significant change of experience occurs at Category 4 and at Category 5. In Categories 1 to 3 professionals remain amongst the beneficiaries. In Category 4 professionals as beneficiaries recede more into the background in their experience. Nevertheless, clients who have benefitted from an interaction with such professionals would be likely to offer return business to them, so professionals as beneficiaries are not totally absent. In Category 5 professionals are backgrounded as beneficiaries in their experience and they are willing to bear negative consequences as a result of their practice.

Similarly, in terms of responsibilities, the citizenships indicate a progressive focus towards others as defining the limits of professionals' responsibilities. In this progression, a significant change of experience occurs at Category 4 and at Category 5. In Categories 1 to 3 the professionals themselves are present in their awareness as controlling the limits of their responsibilities. In Category 4 clients assume the focal place in professionals' awareness of their responsibilities and the professionals themselves recede to the background. In Category 5 humanity assumes the central place in professionals' awareness and the professionals are backgrounded, with professionals accepting responsibility for those with whom they do not necessarily have a formal relationship.

The Category 4 and 5 experiences contrast with criticisms which accuse professionals of protecting and serving themselves rather than their clients. Such criticisms draw attention

to the importance of an other-centred approach to professional practice, not simply to silence the critics but in order to ensure professional practice is adequately grounded ethically.

Other-centred ideals may seem to present an unattainable aspiration to the IT profession, nevertheless my contention is that this reflects professionals' experience of ethics and is defended in the literature as an ethical goal, and thus accurately orients professionals in an ethical direction.

6.2.2. An other-centred definition

Ethics is presented here as being centred on humanity rather than the professional. Such a distinction is important because it moves the focus of professional ethics away from the actor and towards the beneficiary. This is a significant step in shifting interest in professionalism away from the agent and towards the object of their ethical practice.

The nature of professional ethics, then, is primarily understood here to be other-centred. Such a point of view is based on understandings of professionalism and ethics found in the literature, and in this project's empirical research. This is modelled in Figure 5.1.

An other-centred ethic is understood in this account to be more than avoiding harm to clients, but includes the pursuit of the good of others. It reaches beyond professionals' client base (actual or potential), expanding their area of responsibility to anyone who may benefit from their services. Such an expansive understanding of professional ethics requires a new perspective on professional practice, established not in the professional themselves but in the world in which they practice.

This approach supports previous portrayals of IT ethics which focussed away from self, towards others (for example, Floridi, 1999; Gotterbarn, 2004a) by forwarding an argument based on additional evidence from the literature and research.

6.2.3. Other-centredness does not come naturally

The implications of other-centredness as the essential character of professional ethics are pervasive.

Other-centredness sets the scene for practice which is oriented towards serving others rather than protecting the professional. Thus, it provides a point of reference from which

impromptu intuitive decisions may be taken and gives direction to a more deliberative approach when reflection is possible.

The demands of a service orientation may be illuminated by Maslow's hierarchy of needs. According to Maslow (1970), when it comes to human motivation, basic needs are understood to predominate in importance. Physiological and safety needs are the most basic and are highest in priority, whereas belonging, self esteem and self actualisation needs are lower in priority. Maslow's schema has been adapted to the work situation, as illustrated in Figure 6.1.

According to Maslow's hierarchy, professionals' ability to practise ethics would be understood to be highly influenced by their basic needs, and decreasingly influenced as their needs are met progressively up the hierarchy. Therefore, an ethical choice would seem to be less demanding if it jeopardised professionals' self-actualisation needs, in comparison to one that jeopardised their physiological needs. In other words, if professionals were in danger of losing their position in a challenging project, it would be of less consequence to them than if they were in danger of losing their source of income.

Comparing this need hierarchy to the five citizenships found through the empirical study, the citizenships could be expected to exert their influence from Citizenship 1 to Citizenship 5, that is, in the order of their decreasing ability to cater to the individual professional's most basic needs. For example, once a professional's *my world* needs are met, then they are able to consider *corporate world* needs and once they are met, they are able to consider *shared world* needs.

However, if other-centredness properly characterises ethics, then an ethical orientation would be expected to result in the citizenships exerting their influence in the opposite direction, that is from Citizenship 5 to Citizenship 1. This is how IT professionals experience ethics, as found in this study's empirical enquiry, and this perspective is supported in the literature. Once ethics is experienced as *Citizenship of the wider world*, all the other citizenships are experienced in a different way, for example ethics is experienced as *Citizenship of my world* in a different way when ethics is also experienced as *Citizenship of the wider world*. This indicates the radical nature of other-centredness as an ethical standard. It calls into question our naturally self-interested motivations.

Due to our natural inclination towards self-interest, as explored by Maslow, ethics will always present a challenge to us. This is not to say that we do not have legitimate

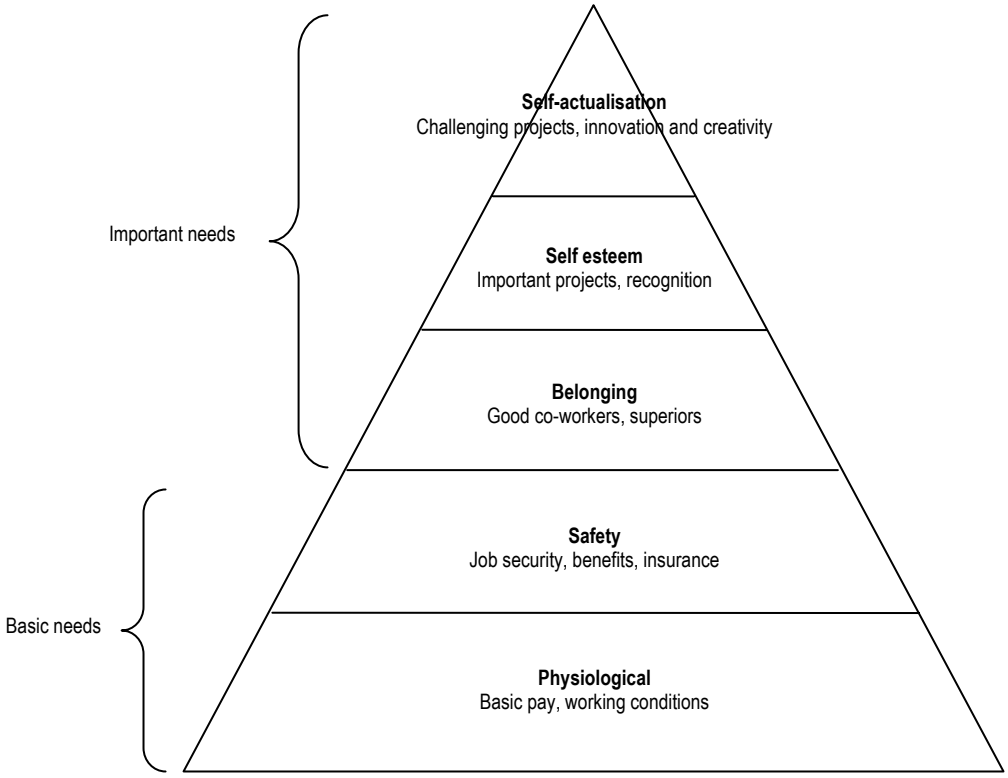

Figure 6.1 Maslow's hierarchy of needs in the work context (Bartol & Martin 1995 cited in Loh, Wrathall, & Schapper, 2000, p.7)

Citizenship of my world ethical responsibilities, it is saying that those responsibilities may require modification in the light of the responsibilities in the other citizenships. For example, a professional may resign from their job, putting their own needs at risk, because of their experience of ethics at another level of the citizenships. Their experience of ethics as *Citizenship of the wider world* may lead them to the conclusion that their *Citizenship of my world* priorities are in reality lower than they would naturally prefer. Their convictions lead them to self-sacrifice and they understand this to be the ethical stance to take.

Such a position is reflected in the interview transcripts. One participant recognised that self-interest forms the standard to which they resort when the decisions become too hard to make and which thus forms an underlying natural foundation.

> in situations like that I think what I would do is probably do the minimum amount of harm to me! As I said, **there's always self-preservation** (Participant 8)

Nevertheless, they recognised that there are principles which challenge such a self-interested position and when those principles are clear, then self-preservation must be intentionally deposed.

> there's a right thing and you do it, **no matter how much pain goes with it**, how much unpleasantness. (Participant 8)

In this way, they forsake their needs in order to maintain an ethical standard. Their experience of self-preservation, while present, has been influenced by their wider view, and has been moderated by it.

> certainly if **you're serving self-interest ahead of everybody else then it's a pretty clear indication that something is wrong**. (Participant 8)

While self-interested experiences are basic to human nature, we are able to challenge them and this research has found that such a response is required of professionals if they are to practice ethically.

The importance of these observations to IT professional ethics is that the difference of experience across the citizenships (and in comparison to the needs hierarchy) would be usefully brought to professionals' attention to prompt them to reflect on the implications. If left unthematised, such conflicts of interest risk to either cause tension which professionals do not understand and are not equipped to face, or be overlooked and left unexplored by them. Other-centredness is so unpopular that its demands need to be intentionally presented and deliberated.

> We have been told, and have come to believe, that emancipation and liberty mean the right to reduce the Other, alongside the rest of the world, to the object whose usefulness begins and ends with its capacity for giving satisfaction. (Bauman, 1989, p.220)

It has been suggested that IT professionals are adept at side-stepping their responsibilities towards others by blaming insufficient specification, insisting that complex systems must fail and transferring responsibility to the machine (Gotterbarn, 2004a). One technique employed to avoid facing responsibility is self deception. Self deception occurs when the ethical implications of a situation fade into the background and the ethical relevance of the situation is not seen. This is a technique employed subconsciously in order to enable people to be self-interested and yet think of themselves as good people. Mechanisms which enable or cause this include the use of euphemisms, slippery decision making, inaccurate causation perception and a constrained representation of the self:

1. Euphemisms replace obviously morally questionable language with abstract or neutral terminology and are used to hide ethical implications.
2. Slippery decision making takes small, seemingly qualitatively insignificant steps, away from ethical practice but which lead down an unethical path.

3. Inaccurate causation perception focuses on individuals rather than systems, employs self-interested motives when assigning blame and blurs moral responsibility when it comes to acts of omission.

4. A constrained representation of the self refers to the fact that people are limited in their understanding of the world, including their ability to assess their effect on others, although the methods they use to determine a moral response to situations may claim to be able to do precisely that.

Self-deception enables people to frame decisions so negative implications are eliminated or are turned into positives. Therefore, for ethics training to be effectual, it needs to face self-deception head-on rather than ignore or deny it. Self-interest has been identified as the trigger for self-deception, which points to the importance of challenging self-centred attitudes (and promoting other-centred attitudes) in the context of ethical formation (Tenbrunsel & Messick, 2004).

6.2.4. Other-centredness as an ethical standard

Despite the un-naturalness of self-giving, an ethic based on our relationship with others is not far from IT professionals' actual understanding of what ethics is about.

When I commenced this study of professionals' experience of ethics I expected to work towards the formation of two lists which would present (a) issues significant to IT professionals, and (b) their preferred methods for responding to them. However, I discovered that IT professionals do not generally experience ethics as issues and methods. They do experience ethics, however, as relationships and talked primarily about these. Such conversation often focussed on the way employers treated their employees and the way businesses treated their customers.

This indicates that, from these professionals' point of view, ethics formation that concentrates on issues and methods is missing the point. In variation theory terms, such formation is typically not likely to meet the learners' relevance structure needs. Professionals as learners may endure such formation (perhaps as a necessary evil, in order to jump through an organisational hoop) but it is not likely to have a lasting effect on them and will thus not necessarily be put into practice, unless it is framed in a way that makes sense to them.

Much research into IT professional ethics is related to the establishment and enforcement of standards. These standards are often defined in terms of issues and methods. However, a relationship-based ethic is both more in tune with where professionals are coming from, and aligns with interpretations of ethics as expounded by Levinas (1998) and of professionalism as expounded by Koehn (1994). Ethical standards, then, which speak of professionals' primary focus as being directed towards others and away from themselves, are more likely to make sense to professionals and are philosophically justifiable.

Other-centredness, in one sense, is more straightforward than choosing from traditional philosophical approaches (for example, duty-based ethics or consequence-based ethics). In the rush of professional life, it provides a rule of thumb that is readily remembered and offers a heuristic device which professionals may employ reasonably straightforwardly. Classical philosophical theories require both the ability to remember their assertions and the capacity to apply those assertions to particular situations. Such deliberation may well be necessary when circumstances permit, for example it is not always obvious out of a field of beneficiaries which one deserves our favour, whether our responsibilities towards our inner circle should be overtaken by the client need immediately at hand.

Other-centredness may not offer an infallible on-the-spot guide, however if we accept that other-centredness is what ethics is essentially about, then an error on the side of other-centredness is an error in the right direction. If we naturally tend towards self-preservation, such that self-interest becomes the base-line from which we must be persuaded to serve others, then it would restore some balance to turn that sense of priority around and make self-sacrifice the base-line from which we must be persuaded to serve ourselves. The effect, rather than causing a violation of ethical standards, is more likely to have a modifying effect on our natural self-centredness.

While other-centredness may be easier to remember than traditional philosophies, in another sense it may appear too high a standard to expect. We find it challenging because it impacts on our natural interest in our own rights and autonomy. Such a standard may be reasonably easy to remember, however it is difficult to apply. The difficulty in applying it does not necessarily lie in our ability to take a decision about where it leads us, but in our willingness to see that decision through to action. However, if we understand ethics to be essentially about other-centredness, then such unwillingness needs to be challenged.

Apart from the pragmatic usefulness of other-centredness, an other-centred attitude lays the experiential foundation in professionals, first for caring whether their practice is ethical or not and then for any more deliberative decision making process they may engage in. If ethics is encountered at a deep level it will become integrated into professionals' practice.

Thus, I propose that other-centredness is a base-line professional standard upon which other guidelines may build.

6.2.5. IT professionals' uneasy alliance with business

IT professionals' understanding of ethics as relating to their interactions with others may help explain why business motives are regarded with suspicion amongst them.

During this study's interviews, a high degree of scepticism was expressed by a number of IT professionals concerning the motives of business. The profit motive was considered to predominate in business and to not offer a healthy environment for the pursuit of ethical practice. Reactions to this situation ranged from monitoring company dealings (with their customers and with their employees) with an intent to resign on the appearance of overly profit-driven decision making, to rejection of the capitalist system and participation in alternative economies. Given the current trend of professionals to be employed in profit-making businesses, this indicates an uneasy joining of forces. A profit-making business which values an ethical IT workforce must work at convincing its IT professionals of the morality of the business's profit-making and of the morality of the business's operations.

Some IT professionals acknowledged that a language which speaks of advantage to the business is the only language many corporate leaders understand. Because of this, IT professionals were willing to use an ethics-is-good-for-business argument as a bargaining chip, though they did not believe decisions based on this to be ethically well founded.

Participants also commented on the difficulties presented to novice IT professionals when it came to pursuing ethical practice. Early career professionals require an environment where they are not expected to have to decide between ethically questionable options. Their inexperience and desire to advance their careers simply leaves them too vulnerable to exploitation. Thus, there is a need for corporate leaders and work supervisors who are ethically mature and able to offer an ethical model to novices. Experienced professionals, however, were not exempt from facing similar difficulties. Their greater and more complex responsibilities may also leave them with a sense of helplessness in the face of

compromising circumstances. It is clear that corporate leadership makes a significant difference between flourishing ethical practice and what can become unbearable tension in the workplace.

As seen from Maslow's hierarchy of needs, employing organisations may exert considerable pressure on employees, through their control of the means of meeting their basic needs. This indicates employers' responsibility to not exploit this situation and to create an environment conducive to ethical practice. Elements identified as integral to such an environment are reflectiveness, humility, anticipation and community involvement (Goodpaster, 2000).

6.3. What does this study contribute to IT professional ethics education?

This study presents an experience-based approach to learning which understands learning as a change of relationship, rather than just a change of cognition or behaviour. This moves the focus away from receiving external truth, towards constituting personal understanding. Such a change is significant because it shifts professional ethical formation away from an instructor's perspective to a learner's perspective. It also transforms leadership in ethics from a controlling role to a collaborating role.

6.3.1. Education as a change of experience

The primary goal of education, then, is to promote a change of experience. Promoting a change of experience is understood to be more than introducing the learner to new knowledge or drilling them in new behaviour. It is instead about establishing a new relationship between the learner and the object of their learning. In this approach the learner addresses the qualitatively significant aspects of the phenomenon and incorporates them into their world. New understanding and comportment result from such change.

The nature of learning is presented here as constitutionalist rather than cognitivist. A change from a cognitivist to a constitutionalist approach requires a re-evaluation of the nature of knowledge and the goals of education. Learners according to a cognitivist approach "are supposed to learn the truth and reproduce it in tests", so when they begin a non-cognitivist course they have to learn again what it means to learn and to "construct their own answers and be critical" (Stahl et al., 2004, p.13). Instead of just learning to

reproduce vocabulary and arguments from "authoritative" sources, learners are expected to engage with the material and develop their own understanding.

Professional bodies and employers rely heavily on authoritative sources such as codes of ethics to provide a standard of conduct for their members and employees. A reliance on unmediated codes and regulation may indicate that a cognitivist approach is being adopted. Such an approach assumes that:

1. reality is independent and separable from humans;
2. reality is objective, and its qualities and meaning are inherent to itself;
3. language corresponds directly to objective reality;
4. causal relationships explain human behaviour;
5. human behaviour has inherent characteristics and is independent of particular situations; and
6. humans are bound by their circumstances to act in a particular way.

In contrast, a constitutionalist perspective believes that:

1. reality and humans are inseparably related through the individual's experience. People behave under the influence of their experience of the world, not outside of it;
2. people's understanding of reality is constructed through their own experience and through their interactions with others; and
3. people's actions are controlled by their interpretation and understanding of a situation. This includes their ideas about: the 'facts' and their alternatives; other people's feelings, intentions, expectations and reactions; and what is right and wrong, and appropriate.

(Sandberg & Targama, 2007, pp.22-30)

In the light of these observations, a constructivist stance does not assume that statements of standards in codes will be understood in the same way as they were authored or that regulation will be interpreted in the same way as it was intended. Knowledge formation is understood to be highly communicative and dependent on specific circumstances.

Therefore, communication about ethics is most effectively conducted in the particular circumstances the professional finds themselves facing and most usefully pursues issues experienced as valuable by the professional in those circumstances. In the light of the difficulties faced by professionals in the organisational setting (as indicated in section 6.2), such conversations about ethics are most realistically initiated and maintained by the organisational leadership, to achieve the "legitimation of moral discourse as a voice in the professional and managerial conversation" (Goodpaster, 1996, p.445).

I am not suggesting here that standards as expressed in codes are no longer needed. However, since professionals interpret these guidelines based on their experience, complementary means are required to make the codes effective guides. Employing self deception (section 6.2.3), the professional can approach codes with an attitude that nullifies their effect. Conversations about codes would start from the professional's perspective and seek to see ethics from their point of view. They then would introduce the professional to new ways of seeing ethics (for example, in conformity with the code), with a view to widening their experience.

Another approach employed in IT education has been to emphasise decision making. This aims at producing independent thinkers. A reliance on the internal processes of the individual and emphasis on critical thinking, decision making and problem solving, may indicate that a constructivist approach is being adopted. This presumes that individuals have the capacity in themselves to discern what is ethical.

The constitutionalist approach, in contrast to a cognitivist or constructivist approach, emphasises not just the environment external to the learner or just the internal functioning of the learner, but the relation between these. Both of the external and internal aspects are seen as contributors, exerting an influence on each other.

A constitutionalist understanding of knowledge formation, for example, deduces that ethical support will not be effective if approached in a top-down managerial style (Sandberg, 1994). Management following a constitutionalist method would start from an understanding of ethics as seen through the eyes of employees, then seek to build a shared meaning of ethics in their specific organizational context. Working collaboratively with employees, they would arrive at an understanding of ethics constituted from both their perspective and the employees' perspectives. This requires a longer time and energy commitment than a directive approach, however it is suggested it would be more effectual

in achieving an ethical outcome. It also proposes a moral means of promoting ethical practice by valuing employees and their perspectives, and could provide a platform to respond to the concerns of IT professionals (for example, concerning profit-making as mentioned in section 6.2.5).

The following ideas serve to indicate the kinds of support which may be offered from a constitutionalist perspective.

1. Since IT professionals see ethics in terms of relationships, one such means may be to clarify the connection of a code with real human interactions. This could be achieved by presenting exemplary scenarios in conjunction with the code's articles. It is of note that this is offered by some professional bodies, for example the ACS (ACS, 2004; Ferguson, Salmond, Al-Saggaf, Bowern, & Weckert, 2005).
2. Since a code presumes a prior ethical orientation, another such means may be to promote other-centred attitudes on the part of the employees. This could be achieved by including ethical formation, based on the citizenships revealed in this study, in employees' on-going professional development.
3. Since ethical guidelines are open to interpretation which relies on professionals' previous experience, another such means may be to examine the extent to which the code aligns with professionals' perspectives. This could be achieved by a study similar to this current project or through tools developed out of this project. This would provide a means of understanding how professionals differ from the expected standard and provide a basis from which to develop learning experiences.
4. Since understanding is constituted rather than simply received, another means may be to embark on a collaborative process of ethical meaning-making. This may result in a rewriting of organisational guidelines, to reflect the broader perspective. Such collaboration could involve stakeholders at all levels of the organisation's operations.

Integral to these suggestions is the goal of changing professionals' relationship with ethics rather than simply striving for a change in memorised knowledge or drilled behaviour. Professionals' previous experience is not considered 'wrong', rather incomplete. The purpose of formation and support activities, rather than to replace their existing experience, is to expand their experience into previously unexplored areas. In this way, professionals' experience of ethics is stimulated to become more comprehensive.

6.3.2. IT professionals experience ethics in diverse ways

In this current study, IT professionals showed that as a group they experience ethics in a wide variety of ways. This indicates that group discussion could be a fruitful means of representing a range of views. Traditional philosophers, codes of ethics and leaders' concerns may be called on to broaden the learners' experience of ethics, however the experience of a group similar to the one represented in this study would be sufficient as a point of departure. Group discussion amongst IT professionals seems likely to provide examples of other-centred practice which are new to some of the participants.

These observations indicate that a *community of practice* approach to ethical formation and support could hold good promise in the IT profession. Phenomenography could contribute to such an approach, just as it has been used to stimulate the development of a community of practice with computing faculty in the university setting (Kutay & Lister, 2006).

6.3.3. Employing experience in the tertiary sector

A concern in tertiary education has been whether to offer dedicated subjects to teach computer ethics or to integrate ethics into the whole curriculum. The Computing Curricula for 2001 (Charlesworth & Sewry, 2002) concludes that IT ethics "is best covered through a combination of one required course along with short modules in other courses" (p.166). The concern of those who are wary of ethics being taught as a separate subject is that ethics taught that way will not be viewed by the students as integral to IT. However, it would appear that the means of teaching ethics, even using the integrated approach, will determine whether students experience ethics as external to themselves or integral to their professional practice and identity. Ethics can be presented as just one of those things you have to know to pass the exam (a shallow approach), whether it is taught as a dedicated subject or integrated into the curriculum.

A way to overcome shallow learning is to teach IT ethics at the experiential level. Formation which employs this method could include the following features.

- An intentional focus on the relationship with ethics as its goal:
    - having as first priority explaining this goal to the learners, through explaining to them the expectations of this approach to learning;
    - orienting the content, delivery and assessment towards this goal; and

  - emphasising encounters with the few educationally critical differences in conceptions, rather than all possible sub-topics.

- An experience-rich approach to subject delivery:
  - interactive delivery through discussion, practical engagement and breadth of input;
  - an emphasis on group work;
  - engagement with people outside the IT community through a wider community project;
  - interaction with IT professionals who model a range of ethical approaches; and
  - integration of reflective space.
- Assessment which focuses on personal engagement:
  - reflective journaling (throughout) which attracts credit;
  - evidence of personal engagement which has significant weighting in each item; and
  - involvement with others esteemed as highly as the reproduction of facts.

Similar strategies are outlined in section 3.2.8. The point here is that the approach to teaching would appear to have more bearing on the quality of learning than the formal arrangement of the course.

6.4. What does this study contribute to research methodologies?

This study offers a contribution to the phenomenographic approach and evidences potential synergy with the Soft Systems Methodology.

6.4.1. Contribution to the phenomenographic approach

This study provides an example of the application of phenomenography to an investigation of ethics, a field which has not been explored in depth using this method. Phenomenography was first developed for the investigation of learning. It has been aligned, however, with Gurwitsch's analysis of human awareness which examines

experience in terms of its theme, thematic field and margin (Gurwitsch, 1964; Marton & Booth, 1997). Given that such notions are universally applicable to experience, phenomenography seems to offer a means of examining experience outside the learning environment. Although a number of phenomenographic studies are not directly applied to learning, the association of these with learning is not impossible since they may be understood to be investigations of the objects of (potential) learning. Moreover, as argued earlier, the structure attributed to learning (of direct object, act and indirect object) may be also identified in ethical practice.

In the current study I offer a vocabulary list and concise definition of terms (Table 3.1), and a checklist associated with such terminology (Table 3.4), which seems to be unusual. It is recognised that these reflect only one interpretation of the method. Their conciseness may also lead to miscommunication and they are therefore dependent on the fuller explanation of the methodology for their meaning to be clear.

The current study emphasises an agreement between empirical evidence (the citizenships) and philosophical positions (for example, Levinas and Koehn) to propose a position concerning professional ethics (the importance of other-centredness). The association of description with prescription may seem to be committing the *Naturalistic fallacy* of deriving *ought* statements from *is* statements (Goodpaster, 1985; Kohlberg, 1981). The observation I offer from this study is that they can be compatible with each other. One is not used here to offer legitimacy to the other, however they mutually support each other. Some argue that ethical statements are correctly "based on mutual awareness" between is and ought (Kohlberg, 1981, p.105). The implications of this position for phenomenographic enquiry remain open for future investigation.

6.4.2. Potential interaction with Soft Systems Methodology

Soft Systems Methodology (SSM) (Checkland & Holwell, 1998, 2004) was developed in order to respond to problem situations in a way that took people's differing perspectives into account. It recognises that these situations are complex because of the conflicting interpretations and expectations of multiple stakeholders. Thus, reality is understood according to this methodology to be constructed by people and encountered in the light of their already established worldviews. Problems defined in purely technical terms do not account for such diversity, however human situations demand that such complexity be contended with. The principal aim of SSM, then, is to provide a tool for learning, whereby

problems caused by the complexity introduced by human beings into a system may begin to be addressed. Solutions are sought through a cyclical process of representation, communication and compromise, understood as a learning cycle. The emphasis on the human perspective, on the construction of reality and on learning align closely with the current study's understanding and goals.

SSM is closely associated with Edmund Husserl's phenomenological insights into perceived reality and Max Weber's observation that intentionality is a human distinctive (Checkland & Holwell, 2004). These are also cornerstones of this present study's approach. It would seem that SSM and this current study offer a synergy of approaches and perspectives that would benefit both. The exploration of such a possibility is left to future research.

6.5. What may this study contribute to other disciplines?

This study draws on the experience of professionals in the IT environment. Nevertheless, the resultant findings could be applied by professionals working in any field. I understand this to be a strength, reinforcing the place the IT profession may take in the wider professional arena as it stands alongside other professions in society. IT professional ethics is not an ethics set apart from everyone else, but an ethics which accords with standards that apply to professional conduct in a wider arena and that apply to human conduct on a broader scale.

> your… ethical responsibility at the current time is to do your IT professionally… to actually make it a profession... So… as an IT professional I'd say the biggest… thing about practising your ethics is to… join the rest of the world and make it a proper job (Participant 26)

The application of these findings could find expression in a diverse range of specific situations, indicating that the contribution of this study may extend beyond IT, to other disciplines.

6.6. What are the limitations of this study?

This current study represents the experience of a specific phenomenon of a particular group at a particular point in time for a specific purpose and is subject to the following limitations:

- The participants were drawn from the South East Queensland community only. While this enabled a breadth of representation through purposive sampling, it is

possible that professionals practicing in another context would have other experiences of ethics.

- The study was conducted in the period from 2006 to 2008. IT professionals from another era may enter into new experiences of ethics.
- The influence of business over IT has not been directly explored, although some professionals (from both the information technology and business fields) conceive of a strong association between business and IT.
- The participants were volunteers who, it could be argued, had an interest in talking about ethics and felt they were able to do so. This may mean that neutral or negative positions have been excluded from the start. These were not the intended objects of the current study - separate projects would need to be designed in order to investigate these phenomena.
- Subgroups within IT have not been compared. A study of IT sub-disciplines may reveal either different experiences of professional ethics or a sub-discipline specific predilection for certain ways of experiencing professional ethics. A comparison of members of professional bodies with non-members may also provide valuable insights.
- The outworking of the analysis in practice has not been elaborated on in detail. Such application would help refine our understanding of the usefulness of this study for ethical formation and support.

6.7. What recommendations ensue from this study?

This research presents challenges to IT on three levels (territory definition, ethical philosophy and learning theory). On each of these levels concepts have been presented which seem to have previously only begun to be investigated in the IT field. These ideas have potential to challenge the status quo, which may lead to significant advances in the field. It would seem to be advantageous to investigate these challenges further, in order to maximise the good effect they may have.

Recommendations which flow from the results of this research are that:

1. the study be continued into national and international arenas. This may add to the variation represented in these findings. As supplementary studies were compared,

a picture of the national and international collective awareness of IT professionals with respect to ethics would emerge. Such insight would prove useful in discerning the ethical experience of the profession and provide guidance for educational programs offered by national and international professional bodies, corporations and academic institutions;

2. a formation program based on the findings of this study be developed in collaboration with an industry partner. This would help determine the best means of implementing in industry the learning concepts proposed in this account. Such program development could be refined in the light of repeated application in a variety of organisations and in time be offered as a learning strategy that could be implemented across many contexts;

3. the change in foundational concepts offered here (with respect to the nature of IT, professional ethics and learning) be discussed and investigated further in order to consider their applicability across IT. This could form part of the international discourse on IT ethical formation. Such interaction with these concepts would develop them further and serve to inform their application in IT;

4. the relationship between the experience of IT and business be explored more to understand how they influence each other in terms of ethical practice;

5. the mutual contributions of this present study's approach and Soft Systems Methodology be explored in greater detail;

6. practical means of measuring the outcomes of this study in professionals' lives be investigated. Such measurement would assist both professionals and their organisations in ascertaining formation needs and training program effectiveness; and

7. the association of the findings presented here with traditional approaches to ethical formation be considered further, with a view to understanding how each contributes to the other and how they may be used in partnership with each other.

6.8. Conclusion

This investigation suggests that, for IT professionals to be best enabled to be ethical in their practice, change is indicated in the formation and support of IT professionals in:

1. *IT professionals' experience of their discipline*, moving towards a focus on information users;
2. *IT professionals' experience of professional ethics*, moving towards the adoption of other-centred attitudes; and
3. *IT professionals' experience of professional development*, moving towards an emphasis on a change in lived experience.

An information user oriented understanding of the purpose of IT is grounded in the evolving nature of IT. Change is already occurring to the discipline, shifting its focus increasingly towards the information user. Such change appears to be in accord with an ethical approach to IT practice, and should be encouraged and accelerated.

An other-centred understanding of the nature of professional ethics is grounded in an outward-looking view of ethics. Such ethics is argued for on the general (Levinas, 1998), professional (Koehn, 1994) and cultural (Schweiker, 2004) levels, challenging professionals to turn increasingly to an interest in others. Some professionals already aspire to this ideal, which is an aspiration that should be applauded and promoted.

An experience-changing goal of ethics education is grounded in research into effective learning (that is, variation theory). Learning that changes the relationship between the professional and ethics offers a foundation upon which other strategies for ethical instruction may build. This type of learning instigates a change of experience concerning what it means to practise ethics as a professional. In turn, it is expected to result in deep-rooted changes in knowledge and behaviour. Such a goal should be integral to ethics formation and support.

I propose that these changes lay a firm foundation upon which an ethical IT profession may be constructed. These conclusions seem to contrast with prevailing approaches to IT professional ethics. They suggest, therefore, that employers, educators and professional bodies may want to evaluate how they approach professional formation and support, if they aim to promote a comprehensive awareness of ethics in IT professionals. IT professionals need to be intentionally oriented towards others if they want to claim that they conduct an ethically mature practice.

Appendices

Appendix 1. Letter of invitation

Seeking IT professionals interested in helping shape the profession.

Ethical theory has much to say to IT professionals about rights and wrongs when working in IT. However, my research approaches the question from the other direction – the perspective of practitioners in the field.

I'm interested in the views of Australian IT professionals who know what it's like to face the pressures of everyday work. I'm using 'IT professional' here in its broadest sense – from software developers to information managers.

I'm not necessarily looking for experts in ethics. You may even be confused and torn. What I desire is that you have real experience and you are willing to talk to me for around 30 minutes about it.

The material gathered will be used to develop recommendations for IT training in ethics, at the professional development and tertiary levels.

If you're interested, please let me know and I'll give you more information about the project. We can arrange to meet at a time and place that suits you, though I would prefer to conduct the interviews in Southeast Queensland.

I assure you that all responses will be kept confidential.

Thank you for considering being part of this research,

Ian Stoodley

PhD candidate, Queensland University of Technology.

i.stoodley@student.qut.edu.au

Supervisors: Assoc Prof Christine Bruce, Dr Sylvia Edwards, Prof Alan Underwood, Dr Trevor Jordan.

Appendix 2. Scenarios

IT professionals' experience of ethics and its implications for IT education

Scenarios

The following scenarios will be referred to during our interview, to prompt discussion. Concerning these scenarios, you will be asked: Are there ethics involved? If so, what are they and how would you respond?

1. You're the quality assurance engineer working for a small software company which is developing an integrated inventory control system for a very large national shoe manufacturer. The system will gather sales information daily from shoe stores nationwide. This information will be used by the accounting, shipping and ordering departments to control all of the functions of the corporation. The inventory functions are critical to the smooth operation of the system. You suspect that these functions are not sufficiently tested, although they have passed all their contracted tests. You are pressured by your employers to sign off on the software. Legally you're only required to perform those tests which have been agreed to in the original contract. However, your experience in software testing has led you to be concerned over the risks inherent in the system. Your employers say that they will go out of business if they do not deliver the software on time. You contend if the inventory sub-system fails, it will significantly harm their client and its employees. The deadline is looming, what do you do now?

2. You're an information manager working for a struggling research firm. Your CEO asks you to gain access to a variety of publicly available information sources stored on CDs, remote databases (such as property transfers and vehicle registrations) or Internet sources (such as telephone directories). The CEO plans to build software that associates the data from these otherwise separate sources, thus providing an indication of an individual's family circumstances, income range and likely shopping habits. She anticipates being able to sell the information to companies that retail products to selected markets, and would promote this product to the consultancy's existing customers and offer it as an additional facility to attract new customers. The CEO is keen to get the product on the market quickly. One day you overhear her speaking with the consultancy's IT manager who was saying he would need a significant amount of time to develop effective data validation procedures, to avoid mismatched characteristics and incorrect data. The CEO insists,

however, that the timeline she has devised is necessary. She comes to you the next day to tell you to send information about the information sources to the IT manager. What do you do now?

3. Two insurance companies have just signed a business agreement, which entitles them to access each other's client records. You are a software programmer for *Integrated Solutions* assigned the task of developing a software program that handles the access and retrieval of records from each company's database system into the other. A first run of the software on real data indicated that the work was state of the art and no difficulties were found or anticipated. Several weeks later during a routine test on the new software you discovered a serious security hole in the existing database system of one of the companies, by which hackers could easily obtain confidential information about clients. You are convinced that while the software you developed would correctly accomplish the tasks required, the newly found security hole would pose a threat to both company's databases. You told your manager about the problem and explained its significance. The manager's response was, "That's not our problem - let's just be sure that our software functions properly." The software is completed and your manager is eager to start work on the next project, what do you do now?

Thank you again for your participation in this project. I look forward to speaking with you in the near future.

Ian Stoodley

Appendix 3. Ethical clearance notification

10th March 2006

Dear Mr Ian Stoodley,

Re: IT professionals' experience of ethical decision making and its implications for IT education

This email is to advise that your application 0600000079 and subsequent response to queries raised, has been considered and approved. Consequently, you are authorised to immediately commence your project.

The decision is subject to ratification at the next available committee meeting. You will only be contacted again in relation to this matter if the Committee raises any additional questions or concerns in regard to the clearance.

Please do not hesitate to contact me further if you have any queries regarding this matter.

Regards

David Wiseman
Research Ethics Officer

Appendix 4. Participant consent

Participant Consent

IT professionals' experience of ethics and its implications for IT education.

Chief Researcher: Ian Stoodley

i.stoodley@student.qut.edu.au

Statement of consent

By signing below, you are indicating that you:

- have read and understood the information sheet about this project;
- have had any questions answered to your satisfaction;
- understand that if you have any additional questions you can contact the research team;
- understand that you are free to withdraw at any time, without comment or penalty;
- understand that you can contact the research team if you have any questions about the project, or the Research Ethics Officer on 3864 2340 or ethicscontact@qut.edu.au if you have concerns about the ethical conduct of the project;
- agree to participate in the project.

Name _____

Signature _____

Date _____ / _____ / _____

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