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Stoodley, Ian D. (2006) IT professionals' experience of ethics and its implications for IT education: Confirmation of candidature.

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

**Confirmation of Candidature**

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**3<sup>rd</sup> November, 2006**

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Mode of thesis presentation: Monograph

Coursework: Completed.

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## **Table of Contents**

<b>Abstract</b>	<b>6</b>
<b>Chapter 1 : Introduction</b>	<b>7</b>
<b>Introduction</b>	<b>7</b>
<b>Background</b>	<b>7</b>
<b>Aims and objectives</b>	<b>10</b>
<b>Tangible outcomes from the research</b>	<b>10</b>
<b>Significance</b>	<b>11</b>
<b>General introduction to method</b>	<b>13</b>
<b>Limitations</b>	<b>14</b>
<b>Key concepts</b>	<b>14</b>
Information technology	14
Ethics and IT ethics	15
Professional	16
Professional ethics	17
<b>Outline of rest of report</b>	<b>18</b>
<b>Chapter 2 : Literature Review</b>	<b>19</b>
<b>Introduction</b>	<b>19</b>
<b>What is the content of IT ethics, as portrayed in the literature?</b>	<b>19</b>
Introduction	19
The content of IT ethics as issues	20
The content of IT ethics as principles	20
The content of IT ethics as paradigms	21
A hierarchy of insights into the content of IT ethics	22
<b>What is the practice of IT ethics, as portrayed in the literature?</b>	<b>23</b>
Introduction	23
The practice of IT ethics as methods	23
The practice of IT ethics as attitudes	24
The practice of IT ethics as paradigms	25
A hierarchy of insights into the practice of IT ethics	25
<b>What is IT ethics education, as portrayed in the literature?</b>	<b>26</b>
Introduction	26

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IT ethics education as techniques _____	26
IT ethics education as goals _____	27
IT ethics education as paradigms _____	28
A hierarchy of insights into IT ethics education _____	29
<b>Methodologies employed to investigate IT ethics _____</b>	<b>29</b>
<b>Conclusion _____</b>	<b>31</b>
<b><i>Chapter 3 : Research Methodology _____</i></b>	<b><i>33</i></b>
<b>What kind of method is appropriate? _____</b>	<b>33</b>
Introduction _____	33
A complex phenomenon _____	33
Choosing phenomenography _____	34
<b>What is phenomenography? _____</b>	<b>34</b>
Experiencing phenomena _____	35
Second order perspective _____	37
Categories of description _____	38
Outcome space _____	39
The what and the how _____	39
Variation theory _____	40
Conclusion _____	41
<b>How would I gather the data? _____</b>	<b>41</b>
Pilot _____	41
Sampling _____	42
Technical issues _____	42
Interview schedule _____	46
<b>How would I make sense of what I've collected? _____</b>	<b>47</b>
Iterative cycle _____	48
Group experience _____	49
Meaning and structure _____	49
Conclusion _____	49
<b>How can what I've done be depended on to be true? _____</b>	<b>49</b>
Dependability _____	51
Generalisability _____	51
Replicability _____	52
<b>What would be the limitations of doing things this way? _____</b>	<b>53</b>
<b>Would this be ethical research? _____</b>	<b>53</b>

<b><i>Pilot Report</i></b>	<b>54</b>
Participants	54
Changes made	54
Preliminary analysis	55
<b>Progress to date and timeline</b>	<b>56</b>
<b><i>References</i></b>	<b>58</b>

## **Abstract**

The rapidly changing information technology environment presents IT professionals with significant ethical challenges. The aim of this research is to contribute to our understanding of how to best equip professionals to practice ethics in such a milieu. The research will supplement existing studies, which are predominantly quantitative, focussed on students and theory-based, by investigating in detail practicing IT professionals' lived experience using the phenomenographic approach.

Phenomenography seeks to elicit variation in the experience of a group of people and present an interpretation of that experience in a way that makes their experience accessible both to them and others. Rather than focussing on the person or on the object of their experience, phenomenography concentrates on the relationship between the person and the object. The result is a model of that experience from the participants' point of view.

During this project IT professionals will be interviewed who are representative of a breadth of experience, age, gender, race, educational background and IT sub-discipline. The analysis of these interviews will represent the variety of experiences described by the participants as a group in terms of their distinctive meanings and limits, and their relationships with each other. The professional experience will be compared with the IT ethics literature to discern how each informs the other.

The educational Variation Theory will be employed to help identify educationally significant aspects of this study, for application in IT professionals' continuing education. It is anticipated that the outcome will be insights useful for all levels of IT ethical formation.

## **Chapter 1 : Introduction**

### **Introduction**

The rapidly changing information technology environment presents IT professionals with significant ethical challenges. This research would contribute to understanding how to best equip professionals to practice ethics in such a milieu. The research would supplement existing studies, which are predominantly quantitative, focussed on students and theory-based, by an investigation of practicing IT professionals' lived experience using the phenomenographic approach. Implications would be drawn for IT professional development.

### **Background**

Information technology is a relatively new discipline and in a continuous state of innovation. This discipline infancy and state of change have left IT professionals in a vulnerable position when taking ethical decisions. Ethics constitute a core aspect of IT professionals' lives, indeed "even though the computer revolution is often described as 'technological', in reality it is fundamentally social and ethical" (1999).

The significance of ethics for IT professionals is recognised by the professionals themselves, employers, academics and students. A recent Australian survey of Information Systems (IS) professionals and educators (Snoke & Underwood, 2006b) revealed they considered ethics to be an important capability for graduating students. 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 Weiner 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." 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" (Bynum, 2000).



The limitless new possibilities made possible by the “logical malleability” of computer technology create vacuums with respect to i. normative rules and policies, and ii. 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. Preston (2001, 6) considers that the expansion of technology has taken us to a point where “the human capacity to determine what we *can* do, has outstripped our ability to decide what we *ought* to do” (emphasis mine). The drive for innovation is accelerating ... leaving our ethical responsiveness lagging even further behind.

One response to this challenge has been to guide IT professionals by means of codes of ethics, through professional bodies such as the Australian Computer Society (ACS). However, the Australian Computer Society (ACS) code is now 20 years old and in need of review - 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, 156). In general, the influential role of codes has been recognised (Munro & Cohen, 2004), however they have also been criticised for being insufficiently comprehensive, internally inconsistent, dependant on 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 & Tavani, 2001; Tavani, 2004; Taylor & Moynihan, 2002; Wheeler, 2002). A complimentary response appears to be necessary.

Another response to the need for an ethical approach to technological innovation has been to focus on pre-vocational formation (Gotterbarn & Miller, 2004; Greening, Kay, & Kummerfeld, 2004; Turner & Lowry, 1999). The ACS Core Body of Knowledge includes an area of knowledge called ‘Ethics’ 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 minimal, an analysis of one undergraduate course revealing it occupies only 0.5% of course content (Snok & Underwood, 2006a). Many IT professionals have thus completed their formal education with only minimal preparation for ethical decision-making. Moreover, as important as pre-vocational

preparation is, practitioners draw on wider experience than students which influences their approach to ethics (Cappel & Windsor, 1998; Prior, Rogerson, & Fairweather, 2002). A response tailored to professionals' needs and insights seems necessary.

Gotterbarn (cited in Rogerson, Weckert, & Simpson, 2000, ¶2) recommends “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”. A critical element in meeting this recommendation is the provision of a support system for practitioners who face ethical dilemmas in the course of their work. Such support includes professional development and continuing education opportunities, however professional development in ethics after university appears to be nonexistent.

The ethics support proposed by researchers to date have been oriented towards enabling professionals to make decisions by applying codes of ethics or methods of reasoning to specific dilemmas (for example, Harris, Cummings, & Fogliasso, 2001, 2002; Robbins, Wallace, & Puka, 2004; Rogerson et al., 2000). A prior step seems to be neglected – attention to the relationship of the decision-maker to the dilemma they are facing. Social psychology and ethical decision-making theories, for example, recognise the significance of attitude in influencing behaviour (Cronan & Douglas, 2006). The research approach proposed for this study would examine the internal relationship of the subjects (IT professionals) to the phenomenon (IT ethics) and is thus anticipated to offer new insight into what professionals bring to the practice of ethics.

Much previous research on IT ethics compares ethical codes to theory on ethical decision-making, or examines the usefulness of such codes in aiding ethical decision-making (for example, Harris et al., 2001, 2002; Rogerson et al., 2000). Also, the development of models of the experience IT ethics and ethical decision-making to date typically starts with psychological theory which is then tested against experience using a quantitative method and statistical analysis (O'Boyle, 2002; Robbins et al., 2004). No research has been found that starts from the practitioner's experience and develops a model of ethics and the practice of ethics based on that experience. This has potential to open the way to a new approach to professional development in ethics.

## **Aims and objectives**

The foundational elements of this project may be outlined in terms of the domain problem, and the research's aim, object, objectives and contribution.

The *domain problem* for this project would be: How may we help facilitate IT professionals' practice of ethics?

The *aim* of the research would be to investigate variation in the lived experience of IT professionals in ethical practice, represent it from their point of view and consider the implications for ethics support.

The *research object* would be the experience of IT professional ethics.

The *research objectives* of this project would be:

1. To understand variation in what IT professionals experience as IT ethics and how IT professionals experience the practice of ethics in IT;
2. To represent IT professionals' experience of ethics and ethical practice in a relational model;
3. To explore the relationship between this relational model and existing models with respect to ethics and the practice of ethics; and
4. To consider the implications for the professional development and continuing education of IT professionals.

It is anticipated the *research contribution* would be a framework useful for professional development in IT ethics.

## **Tangible outcomes from the research**

The research objectives would yield the following tangible outcomes:

Objective 1. Understanding variation

The resulting description of variation in the lived experience of IT professionals in ethics is anticipated to offer new insight into this aspect of professional practice in Australia. This would form the basis for the remaining outcomes and lay a foundation for possible future investigation. Additionally, the research method would be explained in depth with particular emphasis on its application to investigations into ethics, providing a model for similar projects in the future.

#### Objective 2. Relational model

A relational model would be developed, offering a means by which the professional's perspective may be better understood. It is anticipated that this would be presented diagrammatically and in prose, both constructed with a view to making the insights gained as accessible as possible to researchers, educators and IT practitioners. The development of a short survey instrument based on this model is anticipated to help ascertain the perspectives of a particular group, for example for use by an IT professional development officer at the beginning of a period of instruction in order to gain insight into their target audience. This instrument could also be usefully employed as an evaluation tool at the end of a period of instruction, in order to assess the effectiveness of the programme.

#### Objective 3. Comparing models

A comparative framework would be produced, of the above model of actual experience in relation to theoretical models of ethics. This comparison would highlight critical aspects from an educational standpoint, laying a foundation for the application of the pedagogical Variation Theory. The framework would also be expected to provide a useful point of comparison for IT ethics formation amongst similar cohorts.

#### Objective 4. Educational implications

The above comparison would be offered as a basis for informed curriculum design or re-design by IT ethics educators. A suggested plan for implementation would draw the above elements together into a curriculum design and evaluation package. It is anticipated that while this would be directly applicable to post-tertiary IT professional development (useful for corporations and professional bodies) it would also prove useful to IT ethics educators in the tertiary sector.

## **Significance**

The contributions of this research would be to professional bodies, to professional development and continuing education, to tertiary sector educators and to the research field:

- i) To professional bodies
  - a. To date, most research has focussed on the use of ethical codes of professional bodies to guide the practice of ethics. My research would turn attention to *complementary means of facilitating ethical practice*.
  - b. To date, little attention has been given to the experience of IT professionals. My research would add detailed insight into the *inner relationship of these professionals to ethics*.
- ii) To professional development and continuing education
  - a. To date, most studies of ethics survey students in training for the IT profession. My research would broaden the scope, concentrating on *professionals in the workforce*.
  - b. To date, most empirical research conclusions relate directly to instruction in the tertiary scene. My research would add insights relevant to *post-tertiary professional development*.
- iii) To tertiary sector IT educators
  - a. To date, much research has been focused on the tertiary sector. My research, while examining the post-tertiary sector, is likely to contribute insights *also useful to tertiary educators*.
- iv) To the research field
  - a. To date, very little exploration of *Australian* IT professional's ethical practice has been conducted. My research would add this national dimension.
  - b. To date, most ethical studies have relied on quantitative survey instruments for data gathering. My research would *add depth* through the application of qualitative methodology.
  - c. To date, ethical studies have built on psychological theory and tested it against experience. My research would *introduce a new perspective*, developing a relational model based on lived experience.

- d. To date, little research has been conducted by the Faculty of Information Technology, QUT, into IT ethics. My research would represent an *expansion in this area*.
- e. To date, no research into IT ethics has been conducted using phenomenography. My research would therefore contribute to the *development of the methodology*.

It is therefore anticipated that this research would make a contribution on many levels.

## **General introduction to method**

The proposed research approach, phenomenography, was developed in the context of education and has been used widely in that domain. Phenomenography seeks to elicit variation in the experience of a group of people and present an interpretation of that experience in a way that makes their lived experience evocatively accessible to all. 'Evocatively', because in the process fundamental conceptual differences are revealed, which pinpoint key turning points with respect to how the phenomenon is approached and treated.

Aspects of education already researched using phenomenography include information literacy (Bruce, 1997; Lupton, 2004), information retrieval (Edwards, 2004), learning to program (Booth, 1990; Bruce et al., 2004), computer systems (Berglund, 2005), and teaching and learning (Bowden & Marton, 1998; Marton & Booth, 1997; Prosser, 2000; Trigwell & Prosser, 1997).

Variation Theory is an educational theory that applies phenomenography to learning. Its central tenet is that learning occurs when we are introduced to new ways of perceiving the world around us (Marton & Booth, 1997). This is particularly applicable to IT ethical development, because of its power to equip practitioners for a rapidly evolving future through a change of perspective. This contrasts, for example, with an approach to ethics which tackles specific issues as they emerge and which is always a step behind reality.

If you want to prepare people for handling novel situations in powerful ways, the best thing you can do is to try to develop the eyes through which they are going to see novel situations in the future. As people do not act in relation to situations "as such" (i.e., in relation to situations in "the objective sense"), but

in relation to situations as they see them, how the situations are seen is of decisive importance. Powerful ways of acting originate from powerful ways of seeing. (Pang & Marton, 2003, 181)

These theoretical models work in partnership, with Phenomenography providing insight into educationally critical differences, which enables the application of Variation Theory in specific circumstances.

## **Limitations**

It could be argued that perspectives gained through the collection of data in a limited geographical area could only be applicable to that area. The method, described in more detail later, would strive to elicit the broadest possible variation and would draw on a diverse population. However, each participant would be part of a local environment which would itself exert some unique influence on their perspectives.

The question of the honesty of the participants' responses is raised when the data is collected through personal interview. This is because personal interview cannot offer absolute confidentiality and could be seen to be prone to social desirability bias. These concerns are responded to in the methodology chapter, however it must be acknowledged that they may influence the results.

## **Key concepts**

In order to define the scope of this research, we need to begin with a working understanding of the key concepts. This is not meant to pre-empt the findings of the analysis, rather to act as a point from which to start the investigation.

### ***Information technology***

It is accepted in the literature that the basic tools of information technology are at the very least computer hardware and software. This is not always overtly stated, though it is indicated from the examples given and issues pursued. It should be noted, however, that although computer hardware and software are the tools, they are not the objects of IT ethics research.

Some IT ethics studies focus specifically on software related issues, for example software piracy (Hinduja, 2003; Peace, Galletta, & Thong, 2003; Siponen &

Vartiainen, 2005) or software development (Rogerson, 2004) – these presume the presence of hardware on which to run the software.

Many IT ethics researchers have adopted a broad definition of IT. James Moor (in Johnson & Nissenbaum, 1995) included ‘computers and associated technology’ in his definition of the field. (Tavani, 2004) states that the scope of IT ethics should include communications devices. In defining their field of inquiry, Charlesworth and Sewry (2002) state that the proper scope of IT ethics is hardware, software and information management.

The scope of IT may be illustrated by some of the terms used in the literature: information communications technologies (ICTs), cybertechnology, computer science and information management.

In order to embrace as wide a variation of understanding as possible, this research would use a working definition of IT as: computer hardware, computer software and the information exchange that they enable. In keeping with this, professionals would be interviewed from the hardware maintenance, software support and information management sectors of industry. It is expected that the analysis would reveal the scope of IT as seen by the research participants.

### ***Ethics and IT ethics***

Ethics concerns the ‘right’ and the ‘good’, and offers a justification for the choice between competing goods. It not only has descriptive (what *is*) elements but also normative (what *ought* to be) ones. (Holmes, 1984; Preston, 2001)

Traditionally, the concern of IT ethics has been the implications for humans of the use of IT tools (software and hardware). A recent recommendation has been to shift the focus from humans to information, thus ushering in Information Ethics (Floridi & Sanders, 2002). This is presented in more detail later in this document.

For the purposes of a working definition, I would consider the concern of IT ethics as the implications for humans and the environment of the information exchange enabled by IT tools (software and hardware). It is expected that the analysis would reveal the participants’ view of IT ethics.



## **Professional**

Popular use of the term 'professional' makes it synonymous with 'skilled' or 'serious' or 'dedicated'. In some respects everyone is encouraged to take a 'professional' approach to their work: "To be labelled an amateur is to be condemned as lacking competence and useful knowledge; not a serious player in today's competitive marketplace. So by stealth, accident or design all workers can be expected and required to aspire to a professionalism" (Dent & Whitehead, 2002, 1). Formal definitions of the term 'professional' focus on aspects of the unique character or role of the professions.

Definitions of a professional include some or all of the following elements. A professional is someone who:

1. is licensed by the state to perform certain acts;
2. holds membership in a professional association which maintains and enforces standards of conduct;
3. possesses specialist knowledge or skills;
4. exercises autonomy over their work; and
5. has taken a public pledge to assist the needy and therefore have special responsibilities.

While an IT professional may qualify when measured against such a list, each element may also be challenged. Koehn (1994) argues, in fact, that the only item above which uniquely defines a professional, serves as sufficient ground for professional ethics and can be best defended is the last one. Following this line of thought, we can observe the following regarding the IT profession: Many IT practitioners act professionally without any special state licence to do so; a large proportion of IT practitioners are not members of a professional body yet many of them offer professional services; the temptation to IT practitioners to abuse their expert power to the disadvantage of the client requires a moderating attitude to render their services professional; and many IT practitioners are employed in large organisations to whom they are held responsible yet they would be accepted as holding a professional position. Only the last requirement satisfies the need for a basis upon which a client may trust an IT professional to perform their services capably, diligently and for the client's good.

Koehn's concluding definition of a professional is that of "an agent who freely makes a public promise to serve persons (e.g. the sick) who are distinguished by a specific desire for a particular good (e.g. health) and who have come into the presence of the professional with or on the expectation that the professional will promote that particular good" (1994, 59).

### ***Professional ethics***

Professional ethics addresses ethical concerns in the context of a professional role.

Koehn (1994) emphasises the ground of professional ethics as being the trust relationship established by a professional's pledge to serve the public good. She asserts that this is a more reliable basis for entering a relationship with a professional than professional expertise or client contracts, both of which present reasons for distrust on the part of the client.

Grodzinsky (1999) identifies the core need in professional ethics as a thorough understanding of moral agency. Policies and codes depend on prior ethical sensitivity, and virtue ethics precedes deontological or consequential deliberations. Doing the 'right thing' is "an action that flows from the self; it is internally rather than externally imposed" (p10). Although the tendency has been to philosophise about moral theory, Grodzinsky argues for the collection of descriptive accounts of experience which serve as a basis for the development of moral theory. The primary question in ethics, according to Grodzinsky, is "Who am I?" before "What should I do?", since the application of code to professional practice requires existing good character. The need is for IT professionals who have an established and pervasively influential "moral horizon" (2000). Similarly, Gotterbarn (2004) frames IT professional ethics in terms of responsibility. He says our problem is that our concept of responsibility has not advanced along with the advance of technology. It is not enough to pursue a 'due care' philosophy that just avoids direct harm – a professional response should include "positive responsibility" and "the ethically commendable" (p116).

IT professional ethics is thus seen as being dependant on the character of the professional. The professional makes (if only implicitly, by assuming the role of a professional) a public declaration of trust and they can be held to it. A preliminary definition of the ethical IT professional is therefore: an IT practitioner who accepts

positive personal responsibility and measures their practice against the benchmark of the ethically commendable. It is expected that IT professionals' understanding of professional ethics would be illuminated in the course of this research.

## **Outline of rest of report**

The remainder of this document lays the foundation for the proposed study.

*Chapter 2* reviews the pertinent literature, to provide the background to the area of study and to highlight the area of contribution of the proposed study.

*Chapter 3* outlines the methodology proposed for use in making the above contribution.

The *Pilot Report* presents the protocol of four preliminary interviews and some analysis of their findings.

The *Progress to date and timeline* presents the research progress to the current time and a plan for how the research may proceed from here.

## **Chapter 2 : Literature Review**

### **Introduction**

In order to study IT professionals' experience of ethics in detail, we may reduce it to two constituent parts. On the one hand, our study of IT professionals' experience of ethics must consider, for example, what ethical issues concern IT professionals and what they see as the scope of their responsibility. This is what they include in IT ethics, what they understand to be the content of IT ethics. On the other hand, we also need to understand, for example, how IT professionals process the issues involved and prioritise competing responsibilities. This is, then, the way they action their ethics, how they practice IT ethics. These aspects of the content and practice of IT ethics are the first to be presented in this literature review.

This way of looking at the experience of ethics follows the approach of Marton and Booth (1997) to the experience of learning and is particularly applicable to an educational goal. We will return to this when we consider variation theory. Due to the proposed application of my research findings to education, I will also review here the literature pertaining to IT ethics education.

Finally, a review of the methodologies employed to date in the investigation of IT ethics is included.

### **What is the content of IT ethics, as portrayed in the literature?**

#### ***Introduction***

The content of IT ethics answers the question: "Of what is IT ethics constituted?" It includes what writers in the field describe as what it is they are dealing with and what is included in its scope.

I divide the content of IT ethics as represented in the literature into three main aspects, which I argue represent increasingly more powerful ways of experiencing the content of IT ethics. These are IT ethics as issues, as principles and as paradigms.

### ***The content of IT ethics as issues***

When the content of IT ethics is represented as issues, specific instances of potential ethical dilemmas in IT are focused on. In the literature these 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, Cronan, & Kreie, 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 et al., 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 (Ellis & Griffith, 2001).

Some concern has also been expressed about the ethical values and consequences inherent in software. Rogerson (2004) calls for a comprehensive assessment of the implications of software for all who are likely to be affected by it. This responsibility may be avoided or unappreciated because software developers see their task as being value-free (Gotterbarn, 2004). Takanen, Vuorijarvi, Laakso & Roning (2004) suggest that an appreciation of the various layers of responsibility in the software development process is required and, with regard to security concerns, systems put in place for the detection and resolution of software vulnerabilities.

The content of IT ethics has thus been approached as the complex of considerations which surround specific issues to do with information use or software development.

### ***The content of IT ethics as principles***

When the content of IT ethics is represented as principles, foundational values which define IT ethics across various issues are focused on.

Gotterbarn (2004) takes this approach when he exhorts professionals 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". In a similar manner, Munro and Cohen (2004, 916) define ethical behaviour as being expressed in

“responsibility and integrity” on the part of the IT professional who uses their “special knowledge and skills for the advancement of human welfare”.

The content of IT ethics has thus been approached from the perspective of a principle which may be applied to any particular issue by influencing the scope and type of professional services rendered.

### ***The content of IT ethics as paradigms***

When the content of IT ethics is represented as paradigms, the theory underlying IT ethics is focused on. Thus the place of IT ethics in the wider world may be discerned, or a new place forged for it.

Debate has been engaged in concerning the nature of IT ethics in relation to the wider world of ethics. The views expressed fall into at least three groups: i. those who see IT ethics as the application and extension of traditional ethics in IT scenarios (Johnson, 1985); ii. those who see IT ethics as properly belonging to professional ethics (Gotterbarn, 1991); and iii. those who see IT ethics as meriting status as a new field in its own right (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 can 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). However, the traditional approach to IT ethics is criticised as running the risk of blocking important perspectives through its conservative stance and lack of openness to new perspectives.

Those who consider IT ethics as properly an aspect of professional ethics see this as a way of correctly limiting the scope of IT ethics. Otherwise, the ubiquity of IT is seen as rendering IT ethics limitless. It is argued that the developers and managers of IT artefacts properly bear the burden for and hold the key to influencing their effects (Gotterbarn, 1991).

The application of professional ethics to IT narrowly defines the scope of IT ethics and places the responsibility squarely on IT professionals. However, this approach is criticised as being too narrow, since IT professionals are not the only ones taking ethical decisions in the IT environment. Some therefore argue for according an entirely separate status to IT ethics, appealing 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 (Floridi & Sanders, 2002).

The global nature of IT introduces additional complexity. According to Marchant (2004), IT professionals increasingly 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. Gorniak-Kocikowska (2004) signals that “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” (p325). Similarly, Grodzinsky (1999) appeals for values that cross cultural boundaries. Ess (2002) identifies cultural biases embedded in IT which exclude non-Cartesian, dualist approaches and de-legitimise relational approaches to knowledge, such as are important in Asian cultures. The goal of global ethics should not be homogeneity, rather communication which preserves local culture. These perspectives point to a paradigm of ethics that respects and upholds cultures other than our own, or the dominant one. This aspect is paradigmatic as it strikes to the heart of who we are, how we see ourselves in the global context, what the purpose of our IT activity is and requires an awareness that there are others who are legitimately different from us and worthy of our respect.

The content of IT ethics has thus been approached from the perspective of theoretical paradigms which have a systemic effect on the conclusions drawn and insights gained. This influences the understanding of the content of IT ethics in fundamental ways.

### ***A hierarchy of insights into the content of IT ethics***

The approaches to the content of IT ethics outlined above exert an increasingly pervasive effect on the field. An issue-specific approach has to appeal to either a principle or a paradigm if it is to justify any conclusions drawn or offer guidance outside the issue at hand. A principled approach needs to situate itself within an ethical paradigm in order to comprehend its foundation and relate to the wider world. Although issue, principles and paradigms each have an important role to play, I see these forming a hierarchy of insight into the meaning of IT ethics.

## **What is the practice of IT ethics, as portrayed in the literature?**

### ***Introduction***

The practice of IT ethics answers the question: “How does IT ethics work out in professional life?” It includes how writers in the field describe how IT professionals act out ethics and how they resolve the problem of competing goods.

I divide the practice of IT ethics as represented in the literature into three main aspects which I argue represent increasingly more powerful ways of experiencing the practice of IT ethics. These are the practice of IT ethics as methods, as attitudes and as paradigms.

### ***The practice of IT ethics as methods***

When the practice of IT ethics is represented as methods, a systematic methodology is sought which can be used to advantage in all circumstances.

Such an approach to the practice of ethics is typically the result of viewing IT professionals' ethics as a rational decision-making process. Maner, for example, refers to the process of ethical decision-making as “the reasoned and principled process by which reflective moral judgments are rendered” (Maner, 2004, 41).

Step-wise procedures have been proposed to guide such deliberations. O'Boyle (2002) posits a 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. The ACM Code is utilised as a guide throughout this process. Maner (2002) proposes a combination of heuristic ethical decision-making procedures systematised into the steps of preparing, inspecting, elucidating, ascribing, optioning, predicting, focusing, calculating, applying, selecting, acting and reflecting.

Some have argued for the incorporation of ethics into established procedures, such as SSADM (Taylor & Moynihan, 2002). Alternatively, computer tools have been developed to steer the decision-maker through a systematic process. Robbins,



Wallace and Puka (2004) concluded that a web-based decision aid was effective in helping participants comprehensively analyse a case. Robbins (2005) further asserted that ethical problem-solving can be systematised to the point where it is able to be mimicked to some extent by a computer which could thus play a significant role in aiding ethical decision-making.

The practice of IT ethics has thus been approached from the perspective of a rational methodology which emphasises logical, step-wise processes.

### ***The practice of IT ethics as attitudes***

When the practice of IT ethics is represented as attitudes the role of disposition is focussed on.

Greening, Kay and Kummerfeld (2004) express concern that the use of codes to guide ethical practice will not yield satisfactory results because they foster a potentially rule-based attitude towards ethics. Thus, ethics becomes rigid and oriented towards the avoidance of blame through the use of legal checklists. They emphasise, alternatively, the need for an authentic internal engagement with ethics.

While acknowledging that external influences such as the law, the market, social norms and code are legitimate influencers of behaviour, Spinello (2001) urges that “the ultimate regulator should be ethical standards conscientiously applied to actions and policies. There is no substitute and no better 'regulator' than the moral point of view with its attention to the needs and concerns of others” (150). Similarly, Bynum (2004), though presenting a stepped case study methodology, describes the ultimate goal of ethical experience as the development of “ethical intuition” which perceives both that an ethical problem exists and whether a proposed solution is adequate (p60).

Rogerson (2004) argues for a techno-*socio*-economic view, rather than just a techno-economic view, during software development and calls for “an ethically sensitive horizon” to define the “scope of consideration” (p126). Such ethical sensitivity considers the well-being of the breadth of stakeholders affected by IT and needs to be influential throughout professionals' activities.

Gotterbarn (2004) develops the concept of well-being by challenging the IT profession to commit beyond the avoidance of harm to a “concern to maximize the

positive effects for those affected by computing artefacts” (116). This additional layer of responsibility is seen as a key step in moving from a practitioner to a professional.

The practice of IT ethics has thus been approached from the perspective of personal engagement of the professional and an intentional seeking out of the well-being of their fellow world citizens. This goes beyond the application of external methods and requires an enduring and pervasive other-centred attitude on the part of the IT professional.

### ***The practice of IT ethics as paradigms***

When the practice of IT ethics is represented as paradigms examines the foundation upon which IT ethics is focussed on.

Floridi and Sanders (2002) critique existing bases for computer ethics and propose an information-based ethic (which is grounded in being, understood as information) in contrast to the prevalent bio-based ethics (which is grounded in the worthiness of life). They evaluate case-based approaches as resulting in "inconsistencies, inadequacies and an unsatisfying lack of general principles" and tactical solutions as risking “the spreading of ad hoc or causistic approaches to ethical problems” (1). Theory, they say, is the only sound basis for ethical practice, for which they suggest Information Ethics (IE) as providing “the conceptual grounds on which to base problem-solving procedures” (p8). IE departs from classical ethical models by placing the object rather than the agent or the agent’s actions in focus. IE also shifts attention from action or becoming to that of being.

The practice of IT ethics has thus been approached from the perspective of its primary grounds, questioning the theoretical model upon which all else is built.

### ***A hierarchy of insights into the practice of IT ethics***

The approaches to the practice of IT ethics outlined above offer an increasingly pervasive guideline for action. The application of rational methodology to ethical practice depends on a preceding attitude of openness and sensitivity to practicing ethics in order to be applied. Ethical attitudes, in turn, depend on a guiding paradigm to provide them consistency and defensibility. Although methods, attitudes and paradigms each have their role to play, I see these three approaches forming a hierarchy of insight into the practice of IT ethics.

## **What is IT ethics education, as portrayed in the literature?**

### ***Introduction***

IT ethics education answers the question: “How can IT ethics be promoted and supported?”

IT ethics education research, while predominantly focussed on the tertiary education sector, offers insights relevant to the ongoing support of IT professionals. I am using ‘education’ in a broad sense here for the support structures required to help professionals in their practice. The form these supports may take is uncertain at this point, however they may conceivably be a combination of mentoring relationships, in-service training seminars, regular team meetings, reference resources and formal courses.

The relevant research encompasses three aspects of IT ethics education as techniques, as goals and as paradigms.

### ***IT ethics education as techniques***

When IT ethics education is represented as techniques, the most effective procedures to convey ethical issues are focussed on. Two such procedures are the use of codes and case studies.

Education and guidance are included in the possible uses of ethical codes listed by Bynum and Rogerson (2004). Gotterbarn and Miller (2004) suggest the combined use of case studies with a code of ethics as an effective means of teaching ethics.

In the professional sphere, Peterson (2002) conducted a mail survey of university graduates regarding the use of workplace computers, and concluded that codes have a positive effect on employees if they do not have an already established strong belief in universal moral rules. Thus, the need for clear computer use guidelines was emphasised. Munro and Cohen (2004) conducted an online survey of IS professionals in South Africa and concluded that codes should not just exist, the communication and enforcement of codes are integral to their effectiveness.

A concern in the tertiary sector has been whether to offer dedicated subjects to teach computer ethics or to integrate ethics into the whole curriculum. Charlesworth and Sewry (2002) quote the Computing Curricula for 2001 as concluding that IT ethics “is best covered through a combination of one required course along with short modules in other courses” (p166). They suggest a way of integrating ethics into courses is through the use of case studies.

IT ethics education has thus been approached from the perspective of the techniques which help meet pragmatic needs of educators facing students in their daily working lives.

### ***IT ethics education as goals***

When IT ethics education is represented as goals, the aims of this education are focussed on.

Greening, Kay and Kummerfeld (2004) indicate the shortfalls of using codes as the sole source of ethical instruction. Ethics instruction needs to be more than the teaching of rules, the presentation of simple scenarios and reactions to dilemmas, each of which result in a particular (unhelpful) way of viewing IT ethics. They appeal for greater emphasis in IT ethics education to be placed on deep learning, the authenticity of learning tasks and lifelong learning.

Maner (2004) argues for an approach to teaching computer ethics which encourages enquiry and enables a “reasoned and principled process by which reflective moral judgements are rendered”, rather than indoctrinates standards (41). He contrasts his views with those of Gotterbarn (1991) who included socialisation into professional norms as one goal of computer ethics. Maner concentrates the responsibility of ethics education firmly on the process of moral deliberation, rather than the products. Similarly, Bynum (2004) asserts that “good ethical judgement” forms the basis for good ethical analysis and constitutes the core need. Spinello (2001) appeals for attention to the “moral point of view” as a consistent attitude and directs ethical education to the development of ethical responsibility.

Vartarien (2001) expresses the goals for ethics teaching as moral sensitivity, moral judgement, moral motivation and moral character (following James Rest). A moral

approach to ethics education will respect students' free will and autonomy, and avoid indoctrination.

IT ethics education has thus been approached from the perspective of its goals, where attention is drawn to the end effects of education in the lives of the learners.

### ***IT ethics education as paradigms***

When IT ethics education is represented as paradigms, those influences which have the greatest effect on behaviour are focussed on. Such insight indicates where our educational efforts should lie.

Harris, Cummings and Fogliasso (2001) found that ethical behaviour is influenced by an individual's personal ethical structure, dimensions specific to the situation and the environment in which the decision must be made. The third aspect is considered 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, enforcement procedures, and processes that support employees when they are faced with difficult dilemmas).

A recent and comprehensive study of general ethical literature conducted by Cronan and Douglas (2006) revealed that attitude influences intention which in turn influences behaviour. The appeal of this finding is that attitude is seen to be something that can itself be influenced and which therefore provides access to behaviour. An earlier study by Leonard, Cronan and Kreie (2004) found that behaviour is affected by attitude, personal normative beliefs, moral judgment and individual factors. Awareness of consequences was found to be a key influencer of attitude. These studies, and to some extent an earlier one by Banerjee, Cronan and Jones (1998), are based on the moral development framework of Kohlberg and Rest, and on the Theory of Reasoned Action and its successor the Theory of Planned Behaviour. Leonard Kohlberg's theory of moral development (Kohlberg, 1981) has exerted considerable influence on research into IT ethics, though Carol Gilligan (1982) has argued for a care orientation which contrasts with Kohlberg's justice orientation. Kohlberg and Gilligan's approaches contrast (respectively) in their emphasis on the rational vs relational, impartial vs contextual, and dualism vs holism. They indicate fundamentally different approaches to ethics.

IT ethics education has thus been approached from the perspective of its paradigms, where the nature of learners and thus those elements that constitute educationally critical points of contact with them are focussed on.

### ***A hierarchy of insights into IT ethics education***

These approaches to IT ethics education offer increasingly powerful insights to the IT ethics educator. Educational technique requires understanding of its goal in order to give the direction. Approaching IT education from the point of view of its goals requires insight into the most effective ways of reaching those goals. IT ethics education as paradigm determines the theory within which goals and techniques may be applied.

### **Methodologies employed to investigate IT ethics**

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 ethical decision-making to date have used surveys to collect the data, requiring responses on Likert scales, and have been analysed using quantitative methodology (see Table 1). Typically, participants are asked to assess ethical decisions made by a character in a particular scenario. The use of scenarios in determining ethical attitudes was employed early in ethical research, based on a consideration that a person's response to observed events is indicative of their own attitudes and intended behaviour (Flory, Phillips, Reidenbach, & Robin, 1992). However, the extent to which such extrapolation can be taken is controversial (Langford, 1995) and should therefore be employed with caution.

Randall and Gibson (1990) criticise an over-reliance on scenario-based surveys, on the basis of their vagueness and generality - the descriptions of the scenarios often give too little context on which to base a decision and such scenarios are not tied closely enough to reality. Further, the questions posed tend to be closed and result in responses that are limited to researcher-defined categories. In the light of this, they recommend in-person interviews as a more useful means of collecting the data, if the description of the findings is comprehensive. Additionally, Langford (Langford, 1995) considers interviews to be able to indicate the level of integration of a concept in a person's reasoning.

*Table 1: Overview of empirical studies of IT ethical decision-making, 1990-2005*

Study	Subjects		Prompts		Instrument		Method	
	Professionals	Students	Scenarios	Statements	Survey	Mixed	Quantitative	Qualitative
Banerjee, Cronan & Jones 1998	x		x		x		x	
Cappel 1998	x	x	x		x		x	
Ellis & Griffith, 2001		x	x		x		x	
Kreie & Cronan, 1998		x	x		x		x	
Leonard, Cronan & Kreie 2004		x	x		x		x	
Morris et al., 1993		x	x		x		x	
Munro & Cohen 2004	x			x	x		x	
Paradice & Dejoie, 1991		x	x		x		x	
Pearson et al., 1997	x		x		x		x	
Prior et al., 2002	x			x	x		x	
Robins 2005		x	x			x	x	x
Woodcock & Armstrong, 1999		x		x	x		x	

Interviews, on the one hand, are criticised because of their reliance on the participants' conscious understanding in contrast to their tacit knowledge (Narvaez & Bock, 2002), and because they are conducted in a social context which is not anonymous they are thought to bias the participants towards representing themselves in a certain light to the interviewer, rather than presenting their actual experience (Saljo, 1997). Phenomenographic analysis circumvents these criticisms to some extent because develops descriptions based on each statement made by a single participant in the light of other statements made by that participant, and in the light of statements made by all the participants in the cohort. The analysis, then, does not depend on any one participant's representation of their experience and looks 'behind' the participants' statements to interpret their experience. The interview interaction also tends to elicit responses from the subconscious, evidenced from participants' statements 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 the

surprise expressed during these interviews. This is also discussed in the methodology chapter.

Quantitative research, on the other hand, reduces all responses to a pointed (Likert) scale which constrains the respondent and raises the question of their understanding of the meaning behind the dot points offered. Such research also presumes that there are objective elements in ethical decision-making that can be filtered out and examined mathematically. Additionally, the prevailing acceptance of the authority of statistical analysis can hide theoretical and conceptual vagueness (Adam, 2000). Adam argues for a more “conceptual approach” (21) as being the best short term goal for computer ethics, to help meet what she identifies as a need for a more thoroughly developed theoretical base.

The strength of qualitative research is its ability to explore and give a detailed account of complexity (Trauth, 2001). The need for a methodology when researching ethics, which enables the participants to express their reasoning in comprehensive responses to open-ended questions, as free as possible from constraint to external frameworks, indicates the use of a qualitative technique. In fact, behind phenomenography's naissance lay the desire to find a method that could represent human experience, which does not fit neatly into mathematically defined data points.

## **Conclusion**

I have presented here a variety of approaches to the meaning of IT ethics, the practice of IT ethics, IT ethics education and IT ethics research methodology. Some of these approaches, I have argued, are more powerful than others and therefore more useful in approaching the question of how best to equip IT professionals. Paradigmatic approaches offer the most influential base from which to proceed and represent the kind of contribution being sought through this research.

Many of these approaches have been developed and justified in the light of student responses. A rich understanding of the professional's point of view is lacking, a need I hope to help meet by concentrating solely on practicing IT professionals.

All of these studies hypothesise, then test their hypotheses against experience. No IT ethics research approaches ethics from the point of view of the experience of the IT professional first, thus giving them at least some ability to set the 'agenda'. My



research would attempt to give IT professionals more of a voice with respect to IT ethics.

We have also seen the lack of variety in methodological approach to researching the domain - most studies to date adopt a quantitative approach. My research would add the perspective offered by a qualitative approach.

Additionally, the primary focus of research to date has been on either the subject (the decision-maker, for example influences over their behaviour) or the object (ethical decision-making, for example the process of decision-making). No attention has been drawn to the subject-object relationship. It is this non-dualistic focus that typifies phenomenographic research and the express goal of my proposed research.

In so far as IT professionals form a community of practice and that community of practice influences and is influenced by its collective consciousness, the representation of a wide variety of viewpoints on IT ethical decision-making would form a basis from which helpful IT community discussion may be pursued. This is one aspect of education, as viewed by variation theory, as teachers and students learn in a mutually respectful learning space.

Therefore, the contribution I offer in this research would be unique in its combination of a qualitative, personal, experience-based analysis of the relationship between IT professionals and IT ethics.

## **Chapter 3 : Research Methodology**

### **What kind of method is appropriate?**

#### ***Introduction***

When investigating ethics, a method that can handle a complex and largely hidden phenomena is required.

Randall and Gibson (1990) observed when surveying research into ethics that a clear definition of ethics is problematical because of a lack of consensus on the nature of ethical behaviour. As the differentiation between human and machine diffuses, and global connectedness becomes increasingly seamless, the complexity of IT ethics increases. Additionally, professionalism introduces boundary and loyalty concerns.

#### ***A complex phenomenon***

These multiple complications of lack of consensus, rapid technological evolution and the expectations of professionalism present themselves on a united front to IT professionals. Since the goal of this research is to describe a group's experience of ethics, the potential for a complex range of responses is high. The likelihood of such complexity indicates the methodology which should be employed - an abstract and complex phenomenon is appropriately studied using a methodology which can capture its richness (Flory et al., 1992). Such a methodology must combine rigor with flexibility, a systematic approach with the ability to cater for richness, and defensibility with adaptability to meet the desired objectives.

Adam and Ofori-Amanfo (2000) question the usefulness of quantitative instruments for ethics research: What meaning do the respondents attach to Likert scale items? How can clear-cut answers reveal any complexity in the decision-making process? Do objective factors exist in this domain, such that they can be separated out and studied independently? How much quantitative analysis is really a case of hiding behind supposed statistical authority while failing to develop a through conceptual and theoretical analysis? Adam and Ofori-Amanfo thus argue for a more qualitatively-based, conceptual approach to IT ethics than is currently pursued.

In studying ethics a method is indicated which allows us to delve into personal experience. We also require a means of assimilating that information to make sense of it and a way of representing it so a wider audience may understand and make use of it. To exploit the benefits of educational theory in this project we also need to capture and represent the breadth of experience in the community being studied.

### ***Choosing phenomenography***

In phenomenography we find a tool which helps us meet the requirements for studying the experience of ethics.

Phenomenography is designed to manage complex phenomena and describe them in a comprehensive way. The research approach gives access to the subject-object relation, shedding light on the experience of the ethical agents. It also enables the representation of that relation in a comprehensible manner. The matching of phenomenography with variation theory offers a powerful combination to meet the educational aims of the project.

### **What is phenomenography?**

Phenomenography is characterised by the description of conceptions (Svensson, 1997) and provides a means of identifying variation in the way people experience phenomena (Marton & Booth, 1997). This variation is defined by the meaning given to those phenomena, by the structure of their elements and by their relationship with other phenomena. The representation of variation lays a foundation for the application of Variation Theory to design educational strategies.

The phenomenographic research method is anticipated to be an effective means of gaining depth of insight into the complex field of IT professionals' experience of ethics. The method has been widely used in educational research (Booth, 1990; Cope, 2000; Marton & Tsui, 2004) and has been employed in association with variation theory to gain insight into the learning experience (Berglund, 2005; Edwards & Bruce, 2006; Marton & Booth, 1997).

The elicitation and representation of variation is helpful for giving insight into a breadth 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 their world. To this end, less conventional experiences, which would be eliminated in research methods focusing on what is common, are sought after and included.

### ***Experiencing phenomena***

To experience something means to both discern it from other 'things' and to relate it to other 'things' to form a cohesive whole.

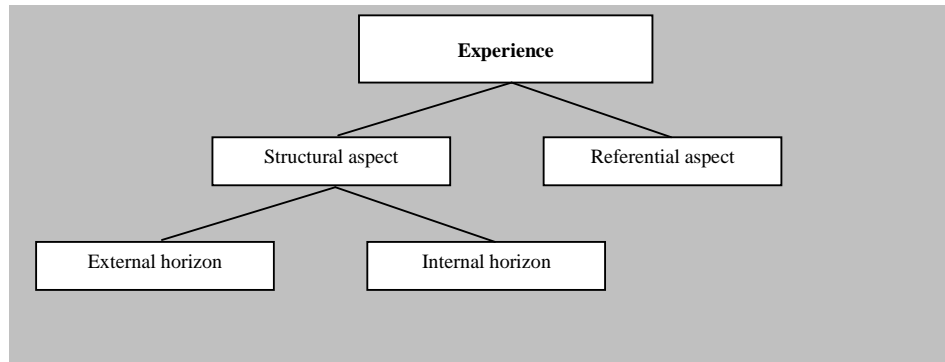
In order for us to experience anything, we must be able to discern it from other phenomena and we must be able to know what it is in itself. In order for us to discern it from other phenomena, it must have a 'space' in our conceptual world which it and it alone can occupy. In order for us to identify its place in our world, it must also relate conceptually to other phenomena in some way.

I borrow an example of the nature of experience from Marton and Booth (1997, 86). Suppose we come upon a deer during a walk in the forest. Although the deer may be partly obscured, we are able to discern its shape and distinguish it from the trees and other phenomena in the forest. We see an antler here, a tail there and a leg elsewhere, and know that they are parts of a cohesive whole. Our past experience of deer in other contexts – a picture book, a zoo – helps us identify the animal in this new context.

Thus, we have been able to separate the phenomenon from its context because we are able to discern how it stands apart from its context. We have also been able to 'put the puzzle together' of the individual parts of the phenomenon because we understand how these constituent parts relate to each other. These two elements make up the structural aspect of our experience – the external context of the phenomenon and the phenomenon's boundaries (called the external horizon), and the relationship of the phenomenon's parts to each other and their final form (called the internal horizon).

Also, in order to know what we are experiencing, we need to be able to assign a meaning to it – we label it a 'deer' and know what that signifies. Therefore, in addition to the structural aspects of our experience there is a meaning aspect, also known as the referential aspect. We should note that, though we may examine a phenomenon by separating its elements, the structural and referential are actually

closely related and experienced simultaneously. These aspects of experience may be represented diagrammatically, as in Figure 1.



*Figure 1: Experiencing a phenomenon (Marton & Booth 1997, 88)*

Because of the endless possible contexts we bring to an experience, the experience of any phenomenon is potentially endlessly variable. A nature-lover observing our forest deer will discern some elements, a photographer others, a biologist others and a naturalist still others. However, given specific aims, there are certain critical aspects whereby a phenomenon consistently stands out from others.

Additionally, as we experience a phenomenon, different aspects of it come into focus or recede into the background, depending on our attention and interest. The more able we are to hold significant elements of the phenomenon in focus at any one time, the more comprehensive our experience of that phenomenon will be. For example, a biologist who is also a nature-lover and photographer, and who is able to simultaneously focus on these various aspects of their experience of the deer, will arguably have a more comprehensive experience of the deer than someone who is simply a nature-lover.

For each phenomenon, then, we may identify a limited number of aspects which are of significance, given our aims, and we may describe in terms of its meaning and structure, the elements that combine to constitute the most comprehensive way of experiencing that phenomenon.

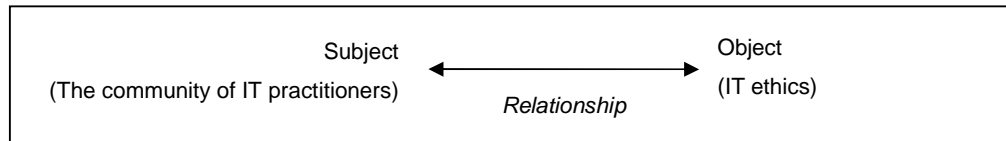
A central tenet of phenomenography, then, is the ways of experiencing any one phenomenon can be portrayed systematically in a limited number of categories which indicate the qualitatively significant ways that phenomenon is constituted by a particular group of people, given a particular aim. This limited number of categories

can be communicated in such a way that makes them understandable to both the experiencers and others. In this way, phenomenography offers a means of gaining access to a potentially complex, otherwise largely hidden, world.

### ***Second order perspective***

Further, this research approach does not concern itself with the mental attributes of a person (as a psychological investigation might) nor does it study the physical aspects of a phenomenon (as an archaeological investigation might). Rather than focussing on the person or on the phenomenon, it attempts to understand the phenomenon from the insider's point of view - it examines the person's *experience* of the phenomenon. This is referred to as 'the second order perspective' (Marton & Booth, 1997, 117).

The adoption of the second order perspective results in descriptions of the relationship between a subject (e.g. IT professionals) and an object (e.g. IT ethics). We thus arrive at the subject's way of experiencing or conceiving of the world, which may be represented diagrammatically as in Figure 2.



*Figure 2: A conception (adapted from Pham, Bruce & Stoodley 2005, 219)*

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 to represent the world faithfully from the point of view of the cohort participating in the study. To achieve this, the researcher in a sense suspends their own opinion and knowledge, and seeks to see the world through the participant's eyes – a position that is referred to as 'bracketing'. It is recognised that this is not entirely possible however, since the researcher brings much to the study. Perhaps a more practical stance is to see the researcher pursuing an understanding of the participant's view, both where it aligns with their own and where it diverges from their own. In this respect, the phenomenographic approach contrasts with methodologies which attempt to prove a theory or answer a specific question, or measure a phenomenon against established standards, and which thus impose overbearing external constraints on the participants.

## ***Categories of description***

A phenomenographic approach results, then, in 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 focus and its perceptual boundary.

The focus of a category describes that which is at the centre of attention when a participant experiences the phenomenon in this way. This distinguishes that category from all of the others. The perceptual boundary describes that which lies at the outer limits of the participant's awareness when experiencing the phenomenon in this way, and defines the category's peripheral border. Borrowing an example from Pollio, Henley and Thompson (1997), Figure 3 may 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 (the grey oval with a black shape inside) may be experienced in at least two ways: i. with the faces as the focus and the space in between in the background or ii. with the vase as the focus and the space to each side in the background.



*Figure 3: A vase or faces?*  
(<http://eluzions.com/Illusions/Ambiguous/>)

Few phenomena are so simple or polarising, and, as previously noted, typically several aspects of a phenomenon may be kept in focus at any one time (for example, our deer seen as a beautiful creation and/or as an endangered species).

## ***Outcome space***

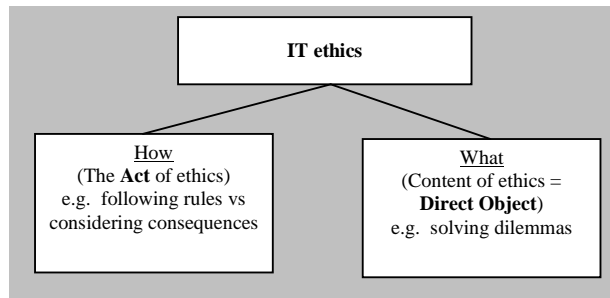
The categories of description resulting from a phenomenographic analysis form a single system in which the categories relate to each other in some logical way. Typically, they form a hierarchy of increasingly complex awareness of the phenomenon, though this is not obligatory (or presumed during analysis). Such interrelationships of categories are represented in an outcome space. This outcome space may be represented diagrammatically, perhaps as a Venn diagram, or in a table.

The representation of the relationship between a cohort and a conception is useful in giving insight into the range of experience of that group. In as much as the cohort represents a wider body, the resulting description represents the experience of that wider body. Outsiders are thus granted an insider's perspective into that 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 a foundation from which educational curricula and techniques tailored to that cohort may be developed.

## ***The what and the how***

The understanding of a cohort's experience can be enhanced by exploring the related aspects of the 'how' and the 'what' of the phenomenon (in this case, IT ethics). The 'how' describes the way it is engaged – how is a decision taken, how are choices between competing goods made? Also, if, for example, there is a decision being made, then it must be focussed on something, or else no decision would be called for – this is the 'what' of ethics. The 'what' describes the content of the phenomenon – what does ethics include, what does it deal with? The phenomenon can be represented, then, as in Figure 4.





*Figure 4: The experience of IT ethics*

The ‘what’ and the ‘how’ aspects of a phenomenon may be examined in terms of their meaning and structure, as indicated earlier. All of these aspects of IT ethics are experienced in a variety of different ways by different people.

### ***Variation theory***

Without intervention, we presume that our way of experiencing the world is the normal and only way, and any different ways of experiencing go unnoticed. It takes a stimulus (an introduction to another way of experiencing the phenomenon) to challenge that state of affairs. As new aspects of the phenomenon are opened to us, those aspects become part of our experience and we change in our relation to the phenomenon. We thus become capable of discerning and separating out previously unnoticed aspects of the phenomenon, and capable of focusing on them simultaneously. Increasing our ability to discern and simultaneously focus on more elements, until we have a comprehensive experience of a phenomenon, is what Variation Theory calls learning.

Learning, then, is enabled through being introduced to new experiences of a phenomenon, which broaden the learner’s understanding of the phenomenon. This kind of interaction with a phenomenon, importantly, enables deep (in contrast to surface) learning (Marton & Booth, 1997).

Additionally, some aspects of a phenomenon will be more significant than others, leading to, qualitatively speaking, a significantly richer experience of it. This focuses our attention as educational researchers away from any and every variation to educationally significant variation, differences which represent a change of conception with respect to the phenomenon.

This should influence where we invest our effort. Teaching has been known to focus exclusively on semantic and syntactic aspects of a phenomenon, especially if assessment items test knowledge of those aspects. However, the conceptual aspects of the phenomenon are more critical educationally for “developmental learning, learning that can be extended to or built on in new problem areas” (Marton & Booth 1997, 80). Attention to the conceptual aspects of phenomena is what fosters deep learning.

## **Conclusion**

Thus, phenomenography describes meaning as it is seen through the eyes of the participants (Svensson, 1997) and is interested in variations in the way people experience the world (Marton & Booth, 1997). Phenomenography can enable the researcher to access the subjective world of the individual and break down the separation of the person from the focus of the research (Bruce, 1997). Language is considered to give the greatest access to this knowledge (Svensson, 1997). Therefore, the semi-structured interview is both a suitable means for accessing people’s experience of ethics and an appropriate data collection instrument for phenomenography. Further, the phenomenographic method of analysis and representation of the results are appropriate for the study of ethics and for exploring their educational implications.

## **How would I gather the data?**

### ***Pilot***

Pilot interviews are being conducted to test the proposed interview schedule and scenarios for their clarity and effectiveness in eliciting the experience of interest. A preliminary analysis of the pilot interviews reveals significant variation, though the sample is small.

The interview schedule and scenarios have been adapted in the light of the pilot results. The scenarios have been successful in general, though one substitute scenario has been developed to broaden their representation of the IT domain. The research topic has been changed from the experience of ethical decision-making to the experience of ethics. This is because it became evident that decision-making was

experienced by some in a broader context and I wanted to make sure we didn't miss out on experiences of that broader context in subsequent interviews.

### ***Sampling***

Once the interview schedule has stabilised, I plan to interview 30 IT professionals who are representative of a breadth of experience in the IT profession. As is customary in phenomenographic research, the participants would be chosen to give the maximum potential for variation, being representative 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, the sample would include both members of the ACS and non-members. (However, the aim of the study would not be to compare the experience of ACS members with non-members.) Using phenomenography, 20 semi-structured interviews with carefully chosen participants have been found to be sufficient with respect to their ability to reveal variation in experience (Dunkin, 2000; Sandberg, 2000, 13). The employment of purposive sampling chooses the pool from which potential participants are drawn, in order to maximise the opportunity for representing a breadth of experiences. The profiles of the participants interviewed would be monitored regularly in order to determine if the sample needs to be adjusted.

In order to limit the need for travel, all participants would be found within Southeast Queensland. This is a population growth area of Australia which includes a diversity of IT professionals. Organisations which have an established relationship with QUT would be asked to advertise the research to their employees and contacts.

As indicted in the introduction, in the interests of eliciting variation, a broad definition of IT would be adopted for this project. The range of IT professionals included in the study would therefore embrace the more technical (software and hardware) focus of some professionals, as well as the information (information management) focus of others. In practice, these aspects of information technology are interrelated and the boundary between them is not clear.

### ***Technical issues***

Some debate surrounds the usefulness of the interview as a means of access to people's experience, for example concerns are raised about the nature of what is

collected during an interview. I also discuss here decisions made in writing the scenarios used as conversation stimulants during the interview.

### **Interviews as a data collection instrument**

As mentioned in the literature review, interviews are considered by some as being opportunities for participants to represent themselves in a certain way to the interviewer more than representations of their real experiences.

Roger Saljo (1997) asserts that phenomenography really collects and most usefully should report on 'accounting practices', that is, ways of talking and reasoning, and should study "the mutual constitution of human experience and discursive practices" (188). I believe phenomenographic analysis helps mitigate the effects of individual interactions. Phenomenographic categories of description are arrived at neither in isolation nor without reference to other participants in the study – the result is more than a representation of a single individual. Categories are also formed with reference to other categories, the presumption 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 avoided and approached cautiously, though this is accepted if needed. Even if a single person contributes a category, this is only decided in relation to the other categories and therefore is supported by logic, if not by others' statements. Thus, categories of description are a result of the social interaction between the interviewee and the interviewer, the logical relationship between isolated speech acts and the interpretive analysis of the researcher. This process is able, though based on self-reporting, to shed light on the interviewees' experience of the phenomenon.

The interview is a social interaction and as such is charged with human failings, however the dynamics of direct interpersonal communication, while introducing complications, also offers its advantages. One such advantage is the opportunity it offers to pursue inconsistencies in a participant's response and reveal avoidances. The interviewer, in trying to see the world from the participant's point of view, will want to understand the reasoning behind any responses indicating these features.

During an interview participants also invariably reveal more of themselves than they anticipate. This is evidenced in frequent comments such as 'I didn't know I had that in me' or 'You sure got that out of me' when the interviewer has simply listened.

This self-revelation seems to be a product of the social interaction generated by the interview.

With respect to survey instruments, concerns are raised regarding whether the questions used lead the respondents in a direction which is perceived to be more socially desirable. This would result in those statements which sound more ethical being chosen in preference to statements that sound less ethical, not because they represent the respondents' true views but because they represent what the respondents think is desirable (Leite & Beretvas, 2005; Ravlin & Meglino, 1987). Crowne and Marlowe (1964) identified the core influence in this process as being the need for approval, however this has been disputed by Paulhus (1984), who proposed the two influences of impression management and self-deception. In the context of phenomenographic interviews, this social desirability bias concern relates to the possibility of interviewers influencing participants' responses through their presence, their choice of questions and their reaction to participants' responses. An attempt is made to mitigate these concerns by verbal assurances in the interview preliminaries that a non-judgemental attitude is being taken by the interviewer and that the goal of the interview is for the interviewer to see the world from the interviewee's perspective. Also, questions are intentionally open-ended, in order to not lead participants into a particular response and the interviewer's conscious adoption of the attitude that all experiences are of equal value should limit any leading reactions on their part.

A central element in the concerns raised by social desirability bias is the degree of honesty in the participants' responses. A core factor with respect to how honest participants are willing to be is the assurance they receive of the confidentiality of their responses. There are indications that personal assurances of confidentiality are far more effective than written assurances in allaying respondents' concerns and that face-to-face interactions actually produce more accurate results because of this (Aquilino, 1994; Smith, Adler, & Tschann, 1999).

There may be some concern that self-deception thwarts the interview before it even begins. Tenbrunsel and Messick (2004) examine the role of self-deception in unethical behaviour - the tendency to explain away selfish motives and not see the moral element of situations. Thus, 'ethical fading' bleaches the moral elements out of a situation, until they are not longer perceived as being significant. This process is

seen as occurring prior to ethical decision-making and is fundamental in determining its outcomes. As part of this process, decisions are framed so the ethical element is forced into the background and regarded as business or economic decisions rather than ethical ones. The advantage of personal interviews is that an interviewer will potentially perceive these dynamics at work and be able to use prompting questions to illuminate the reasoning behind such occurrences. Some enablers of self-deception suggested by Tenbrunsel and Messick can be looked for during the course of an interview: the use of euphemisms, the cumulative effect of small compromises, the erroneous perception of causation and overconfidence in our ability to accurately predict the effects of our actions. Nevertheless, we should acknowledge that even a self-deceived experience of ethics reveals a genuine experience - that is, the goal of the interview is not to produce normative ethical statements but to describe experience.

### **Development of scenarios**

In the course of the interview, scenarios are presented to the participants, as a stimulus for discussion. It is anticipated that some participants may have a limited initial conscious awareness of ethics in their professional practice. These scenarios are meant to help stimulate participants' thinking and help connect them with the world of ethics. For participants who have an existing strong connection with ethics, the scenarios serve to test their horizons and gauge the limits of their perspective.

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. They were chosen in order to represent a variety of possible scenarios from a range of viewpoints of IT. Participants would thus find some scenarios they readily identify with and others that would cause them to question whether they were IT ethical scenarios at all or stimulate them to think about a new perspective of IT ethics.

Some of these scenarios have been adapted from previous studies, indicated below:

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? (ACS, 2004; Burmeister, 2000)

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? (Parker, Swope, & Baker, 1990)

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? (ACS, 2004)

The interview schedule and scenarios would be sent to the participants before the interview date, to enable them to consider their responses.

### ***Interview schedule***

The dialogue during the semi-structured interviews would be guided by four core questions. The participants' responses to the core questions would determine the subsequent interaction, with prompting questions introduced by the interviewer to enable the participants to fully express themselves. The prompts may simply indicate a listening ear (the nod of the head, a 'Yes'), may verify that the interviewer has heard correctly (repeating the participant's last point) or may take the form of a straightforward request for elaboration on a specific idea ("Can you tell me a bit more about that?"). No value judgments would be expressed with respect to the validity or acceptability of the comments made. All questions would be 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, would be represented in the analysis.

The core interview questions are 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 2 for more detail). The prompting questions would explore the dual aspects of their experience of the content of ethics (i.e. the 'what' of the phenomenon) and their experience of the practice of ethics (i.e. the 'how' of the phenomenon).

*Table 2: Interview schedule*

<b>Question</b>	<b>Rationale</b>
1. Explain what IT work you do now. Can you remember a situation where you had to practice ethics as an IT professional? Describe the situation and how you resolved it.	Starts the participant thinking about their own experience
2. In reference to these examples [3 cases supplied pre-interview], are there IT ethical issues involved? If so, what are they and how would you go about resolving them?	Broadens the conversation to other contexts
3. When you were looking at these examples, what helped you decide what the IT ethical issues were and how you would resolve them?	Prompts reflection on a more general level
4. In general, what does it mean to practice ethics as an IT professional?	Requests an abstract statement

The interviews would be recorded and transcribed, removing any information that may identify the interviewee, and the subsequent analysis would be based on these transcripts.

## **How would I make sense of what I've collected?**

The analysis of the data collected would be conducted in accordance with the aims of the phenomenographic approach – to see the world from the participants' viewpoint, to represent the full variety of experiences and to reveal critical differences.

It is anticipated that the data set generated by the interviews would result in approximately 300 pages (120,000 words) of dialogue. Although a computerised word analysis may be helpful in giving some structure to this quantity of information, the meaning behind the words determines their significance for the 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 would be considered in the context of the whole interview. This would help avoid the possibility of misrepresenting a participant's experience by taking their comments out of context.

The software package Nvivo enables quotes to be easily viewed both independently and in its original context. This software is a valuable organisational tool, however the analysis would depend on myself as the researcher becoming immersed in the text of the interviews, and thus enveloped as much as possible in the worlds of the interview participants.

### ***Iterative cycle***

The analysis would follow an iterative cycle of careful reading of the transcripts, organisation into tentative categories representing the essential aspects of the experiences revealed, and return to the transcripts to assess these categories against the interview data.

When organising the experiences into categories, the focus would be on both the separation of dissimilar experiences and the grouping of similar experiences. The identification of critical differences between experiences would indicate distinctions which tend to separate and the identification of essential features in common across experiences would indicate similarities which tend to group. As tentative categories are formed, they would be rigorously tested against the interview transcripts with a view to disproving their validity. As experiences were found which destabilise the categories, these experiences would be incorporated into the categories, perhaps through a redefinition of some or all of the categories, or through a comprehensive decomposition and recomposition of them into a new set of tentative categories.

In this way, an intimate connection would be established between the interpretive categories formed and the spoken word of the participants until a stable state was reached. In this stable state, the experience of the whole group of participants would be comprehensively represented.

In order to faithfully represent the participants' experience, the descriptions of the categories would employ their words as much as possible and be illustrated by relevant quotes.

## **Group experience**

The primary goal of the analysis would be to represent the variety of experiences of the participants as a group. Any one category would not be designed to represent exhaustively any one participant's experience, rather the categories would be representative of the group's collective experience of ethics and ethical decision-making. Therefore, representative quotes illustrating a single category may draw from several interviews and quotes from any one participant may be representative of a number of categories. Consequently, a participant reading the analysis may identify with a number of the categories formed. The categories would endeavour to represent all the experiences of the participants interviewed.

## **Meaning and structure**

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

## **Conclusion**

I would therefore arrive at a representation of the collective experience of a group of IT professionals, with respect to ethics. I would endeavour through my sampling to make this as representative of the wider IT professional community as possible.

## **How can what I've done be depended on to be true?**

Qualitative methods of enquiry must be submitted to a means of verification that is consistent with the bases of qualitative research (Lincoln & Guba, 1985). Lincoln and Guba suggest that the conventional quantitative criteria of trustworthiness are transformed for naturalistic research, as follows: truth value becomes credibility; applicability becomes transferability; consistency becomes dependability; and neutrality becomes confirmability.

It should be acknowledged that phenomenography, in its most limited interpretation, cannot claim to represent directly more than the views of the cohort under

investigation. Sampling for representative variation, however, makes the results applicable to a group wider than the actual participants of the study. The most significant questions about the research, therefore, are if the analysis is a dependable record of the participants' experience and if the methodology employed is defensible as suitable to the task.

Sandberg (1997) argues that the central concern when justifying the outcomes of a phenomenographic approach is the establishment of the reliability of the researcher's interpretation. This does not concern itself with a supposed objective reality to which the research results are expected to conform. It rather responds to concerns that the researcher has unduly imposed their own experience on the analysis and has thus misrepresented the participants' experience. Sandberg (1997) suggests a way 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 (called 'horizontalisation');
4. Searching for a basic meaning structure which is stable across the data; and
5. Use "intentionality as a correlational rule". (210)

Bruce (1997) suggests that the trustworthiness of the outcomes of interpretive studies can be defended on the basis of:

1. A "demonstrable orientation towards the phenomenon" (achieved by phenomenological reduction, listed above);
2. A conformity to the phenomenon of interest; and
3. Communicability of the outcomes. (106)

This research would be conducted throughout according to these criteria.

Questions are typically raised about the dependability, generalisability and replicability of research findings. These expectations rest on philosophical assumptions about the nature of truth - that it is objective, stable, knowable and

external to the observer. Truth from a phenomenographical standpoint, however, is seen as at least partly subjective, constructed according to context, probably not completely knowable and a result of the interaction between the observer and the observed. Nevertheless, some response to the traditional questions may be offered in addition to the criteria above.

### ***Dependability***

A number of techniques are proposed for verifying the dependability of the analysis. By dependability I mean i. the accuracy with which the participants' experiences are represented without undue influence by the researcher; and ii. the coherence of the analysis and description within the phenomenographic method.

When the analysis seemed to be reasonably advanced, the participants would be consulted to ascertain whether they as a group could see themselves in the categories formed or whether some adjustment needs to be made to make sure their perspective is included. A further test would be an 'inter-judge reliability test', whereby other phenomenographic researchers are asked if the categories seem to be representative of the quotes given and the descriptions of these categories are coherent.

By using participants' vocabulary in the descriptions the participants' voice and influence would be allowed to permeate the analysis, moreover the iterative nature of the analysis process would firmly ground the resulting description in the data collected. The final check for reliability would rest with the intelligent reader of the resulting category descriptions and outcome space, for each should be transparent and intimately linked to the data collected. The analysis would be made accessible to the reader so they would be able to themselves be a witness to the accuracy of the conclusions drawn.

To summarise, three sources of external assessment would focus on specific aspects of the analysis: i. the participants assess whether their views have been included; ii. other experts in the method assess the internal consistency of the analysis; and iii. the readers assess the consistency of the description with the data.

### ***Generalisability***

Expectations of generalisability are usually associated with the ability to apply the results of a study unaltered in another context. The generalisability of the outcomes

of this study, however, would lie not in any claim to present results that can be universally applied to all cohorts, but i. in their close approximation to similar cohorts through sampling for variation and ii. in their usefulness as a source of stimulus for interactions with other cohorts.

The closer a cohort was in nature to the group studied, the more likely it would be that the categories found in this study would be representative of the new group. Tools would be provided to help determine how closely the new group conforms to the cohort of this project. Given the limited number of ways any single phenomenon may be experienced by similar participants, the results of this study would be likely to correspond closely to the experiences of other Australian IT professionals.

Dissimilar cohorts would be likely to share at least some of the experiences of this study's cohort. Even if they were dissimilar, the detailed description of this cohort's experience would provide a point of comparison for reflection on the dissimilar cohort's experiences. Thus any reader may use the results of this research as a catalyst for reflection.

As Lincoln and Guba (1985) observe, the application of research findings in new contexts cannot be the responsibility of the original researchers, since they have no way of knowing what new contexts their findings will be applied to. The responsibility of the original researchers is, however, to provide sufficient evidence for judgement to be made by the appliers of their research findings. They do this by providing rich descriptive information.

### ***Replicability***

The quality of the description of the research method used and the cohort of participants involved in the study would enable some degree of replicability by others. Nevertheless, factors which I would argue are uncontrollable across all studies are the passage of time and the input from the researcher. Especially when we focus on experience, even the same cohort of participants will have a different story to tell over time. The insight and experience the researcher brings to the study will also influence its outcomes. The usefulness of studies of this kind are not to enable reproduction of the findings but through the findings to stimulate development.

## **What would be the limitations of doing things this way?**

As previously indicated, it is not always clear what exactly is being reported in an interview dialogue (Saljo, 1997). For this reason, although I have suggested counter measures to this provided by the method, specific claims about the outcomes should be made cautiously.

It should be recognised that discourse expressed in interviews is probably not completely equivalent to experience, however it is not completely unrelated to experience, either. Nevertheless, it has to be asked if language is not the way towards understanding another's experience, what is? What a certain behaviour represents is an even more unclear picture. We also should recognise that we are not necessarily able to explain and understand our own experience. To some extent we experience without having to verbalise and we experience without being consciously aware of the full meaning or extent of that experience. However, we working with the most accessible resources we have - language and self-analysis – we strive to shed light on an otherwise inaccessible world.

## **Would this be ethical research?**

This project was scrutinised by the QUT Office of Research and clearance sent on 10<sup>th</sup> March 2006 with authorisation “to immediately commence your project.”

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

- After transcription, the recorded interviews would be erased;
- Any identifying information would be removed from the transcriptions; and
- The analysis would be based on these ‘sanitised’ transcripts.

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

The complaint procedure, in case of concern about the conduct of the project, would be explained to each participant before interviewing commences.

## **Pilot Report**

Four pilot interviews have been conducted, to test the interview schedule and scenarios used as prompts. Some adjustment has been made to both.

### ***Participants***

The four participants of the pilot interviews were two males and two females. One was aged between 31 and 40, two between 41 and 50 and one over 51 years old. They represented a diversity of cultural heritage - the UK, Central Europe, Australia and New Zealand. All were employed in the tertiary education sector, three as lecturers and one as an Information Services Manager. Two were members of the ACS, one was a member of professional bodies but not ACS, and one was not a member of any professional body. Two had received ethics instruction at the tertiary and professional levels, one only at the professional level and one had not received any formal ethics training.

### ***Changes made***

In the course of the pilots, the protocol remained mostly the same. However, the scenarios used as prompts for discussion did not seem to be diverse enough so for the final interview one was replaced with an alternative scenario. This in the end did not seem to make much difference, however more experimentation is needed to be sure.

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 argument in criticism of scenarios is 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 were familiar with but also are stimulated to think in new ways so the limits of their understanding can be revealed.

## **Preliminary analysis**

A preliminary analysis of the pilot interviews reveals variation in the participants' experience.

1. IT ethics is a comprehensive approach to 'doing IT', influenced by previous decisions made and your immediate community. For example:

- a. the low security option in one scenario should not have even been offered in the first place – this would have avoided the difficult situation;
- b. you bear the consequences of others' decisions – you may be cornered into unethical acts that are nevertheless the only viable option open to you;
- c. if your whole way of doing things is ethical, you don't have to face major ethical decisions.

2. IT ethics is up to the individual. For example:

- a. The acid test is, "How would you feel if it was you?";
- b. The acid test is an undefinable sense of doing the 'right thing', something you 'just know';
- c. Intelligent people are able to figure out what the ethical thing to do is.

3. IT ethics is a distributed responsibility. For example:

- a. If my boss takes a certain decision, I can depend on them to have sufficient perspective to be doing the right thing, I don't have to worry about it except to do as I'm told;
- b. It's ethical to make decisions on behalf of others with less experience who are dependant on us don't even know we should be making.

4. IT ethics is an extension of general ethics. For example:

- a. IT ethics is ethics applied to an IT scenario or environment.

5. IT ethics is modelled. For example:

- a. IT ethics is more than intellectual facts, it is personal character that is modelled to others.



## **Progress to date and timeline**

The following timetable (Table 3) indicates the progress of this project to date. The principle task prior to confirmation has been the development of the literature review and drafting of Introduction, Literature Review and Method chapters. Four pilot interviews have been conducted and transcribed, and a preliminary analysis completed, with a view to assessing the adequacy of the interview schedule and method.

Scholarly activities engaged in during this period have been: 1. Consultation in July 2006 with leading Australian, British and American scholars in IT ethics and participation in a professional ethics seminar in Canberra; and 2. presentation in September 2006 of the methodology at a QUT Gardens Point Interpretivist Group seminar. The Australian and British scholars I met in Canberra said that they knew of no one else trying to do the kinds of things I was proposing for this project.

The remainder of this research project may be grouped into the following tasks: Task 2. Data gathering; Task 3. Data analysis; Task 4. Model development; Task 5. Comparison with other models; and Task 6. Exploring the implications. Many of these would proceed in parallel, though commencing in this sequence. Write-up of the procedures and findings would continue throughout.

*Table 3: Research Timetable*

	1 <sup>st</sup> qtr	2 <sup>nd</sup> qtr	3 <sup>rd</sup> qtr	4 <sup>th</sup> qtr
<b>2006</b>	Ethical clearance Stage 2 (7th Feb.) <u>Task 1</u> : Literature review ITN100 Research Methodologies	Literature review Draft theoretical framework chapter Pilot interviews	Finalise interview schedule Draft literature review chapter Pilot interviews <i>Consultation and seminar - Canberra</i> <i>Interpretivist Group presentation</i> Faculty Progress Report	<i>Confirmation of Candidature Seminar (20th Nov.)</i> <i>QUALIT2006 Doctoral Consortium Paper</i> <u>Task 2</u> : Data gathering Interviews Transcription
<b>2007</b>	Interviews Transcription <u>Task 3</u> : Data analysis	Interviews Transcription Analysis <u>Task 4</u> : Model development Faculty Progress Report	Analysis <u>Task 5</u> : Comparison with other models <u>Task 6</u> : Exploring the implications. Faculty Progress Report	Analysis Draft results chapter Progress report (Nov.) <i>Conference Paper</i> Comprehensive review
<b>2008</b>	Full draft completed <i>Discussion chapter</i>	Revision Faculty Progress Report	Revision <i>Journal article</i> Faculty Progress Report Submit (Sept.)	Completion (7th Nov.)

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