Extending Human Potential In A Technical Learning Environment

by

Kay A. Fielden
B.Sc.(Hons)(Canterbury, NZ), M.Sc.(UNSW),
Graduate Diploma in Social Ecology, (UWS, Hawkesbury)

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PLEASE NOTE

The greatest amount of care has been taken while scanning this thesis,

and the best possible result has been obtained.
DECLARATION

This is to certify that the work presented in this thesis has not been submitted previously to any other university or institution for a degree or award.

... Kay Fielden
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Without my dear friend Michael Braund, this thesis would read like a dyslexic's chicken scrawl. I thank him for the many patient hours he has spent correcting grammar and punctuation, especially the split bloody infinitives, and at the same time, he has honoured my individual style. I am indebted to my children's interest and patience with me while I have been studying. They have cooked meals, walked dogs, reconstructed fences and reminded me that I need to take time off occasionally from studying. I would also like to thank the University of Canberra for releasing me from teaching duties in 1993 so that I could concentrate on my study. Thank you also to my first PhD supervisor, Peter Milser. I am indebted to the “committee of three”, David Russell, John Cameron and Robert Woog, who have been very patient and, at the same time, insistent on correct academic form for this thesis. I would also like to thank the many students who participated willingly in my research. Thank you to David Clark for help with Word for Windows and for discussions on matters spiritual and moral support. Thanks also to my colleagues, many of whom think I have gone off the deep end this time. Thanks to the staff in Social Ecology at the University of Western Sydney for the residentials that never failed to provide stimulation, provocation and good times. And, lastly, thank you to the other David Russell, for the many hours spent reading, editing and providing incisive, critical and positive feedback with such love and care.
Abstract

This thesis is a report of a participatory inquiry project in which I look at enhancing the learning process in a technical academic field in higher education by utilising tools and techniques which take us beyond the rational/logical, intellectual domain in a functional, objective world. By empathising with, nurturing and stimulating the whole person not only in the present, but also taking account of the past patterning, as well as future visions which include technological advances to augment human awareness, the scene is set for depth learning to take place.

Depth learning in a tertiary learning environment can only ever happen as a result of the dynamic that exists between the dominant, logical/rational, intellectual paradigm and the experiential extension of the boundaries surrounding this domain. Any experiences which suppress the full, holistic expression of our being, whether this be intellectual, emotional, spiritual, kinaesthetic, or any combination of these aspects of our being, alienate us from the fullness of the expression and hence from depth learning. Depth learning is indicated by intrinsic motivation, which is more likely to occur in a trusting and supportive environment.

Participatory inquiry requires me to be present fully in the process and to report in a way that is consistent with subjective research. I have done this by using a variety of writing styles, intertwined throughout the thesis. This project has been, and continues to be, my passion and my driving force. It is not just a piece of academic writing but an all-consuming drive to improve the way in which we learn. My world of work happens to be a technical one, where the challenge is greater, and where the dominant thinking and learning paradigm is objective functionalism.

This research has taken place within a systemic intellectual framework, where emergence is the prime characteristic used to evaluate research results. By taking small steps and being attuned intuitively to those around me, I have progressed with this research, sometimes painstakingly slowly, sometimes surging ahead, and sometimes grinding to a halt. I have reported on an evolving research methodology. This is an ongoing process.
Keeping the words dancing across the pages, treating the ideas with lightness and reverence. It’s like a stream flowing in a certain direction, raging through rapids, full of passion and fury and storming, then falling over the edge into a waterfall, crashing into a pool below and then the calm descends and the water is free to meander downstream, slowly, leisurely having dealt with the turmoil.
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Chapter 1: Introduction

My main interest as an academic has always been a fascination with how people learn, irrespective of the subject matter. This research project has evolved out of this interest, as well as from a concern that students in the Faculty of Information Sciences and Engineering, on the whole, did not seem to be enjoying their courses nor did the learning seem to be very effective. In the two years before I enrolled in the PhD program in Social Ecology, I completed a Graduate Diploma in Social Ecology that introduced me to a new world of learning, new ways in which learning could occur and new skills and tools to add to my teaching repertoire. This increased repertoire of teaching skills, together with my concern about improving the learning process for the students with whom I came in contact, was the driving force behind wanting to consider extending human potential in a tertiary technical learning environment. As the research project evolved, and as I became more familiar with using my increased repertoire of skills, I realised that the changes in states of consciousness that we all experience, whether they are in conscious awareness or not, have a vital link to when and if depth learning takes place.

Because the traditional academic setting in technical areas such as computing is one in which the learning takes place in the logical/rational intellect, rather than in our whole being, it seemed to me that there were many possibilities to explore in extending human potential if I included exercises that were more holistic in nature—like dancing, singing, meditation and movement. As I became more experienced in integrating exercises with class content, there was a lived-experience to which everyone in the class could relate the material, and the learning deepened. I have used description and interpretation as my main research tools in reporting this lived-experience.

In chapter 2 I outline the participative inquiry in a technical learning environment conducted in this research project. I consider the context, content and structure of the
research. This is an evolving, qualitative research project carried out within an unemotional, objective, highly-focussed academic world of learning about computing.

Chapters 3, 4 and 5 contain the intellectual framework for this research project.

In chapter 3 I consider a number of theories of depth learning drawn from the literature on accelerated learning theory (Caine & Caine, 1991, Lozanov, 1978), Heron’s (1989) manifold learning and Gardner’s (1985) seven intelligences. I will look at how I have developed my ideas on depth learning from classroom experiences, and I will consider how these ideas have been reinforced by student feed-back on depth learning. In exploring the content of the research project in chapter 3 I consider how I have used the tension in a cultural chasm to enhance the learning in a technical world. I also look at the range of attitudes to learning in a technical world, a range that extends from a rigid, traditional, objective view to one in which I have involved students emotionally, vulnerably, honestly and openly. In chapter 3 I also spend time considering learning as a social process compared to learning in isolation. Learning in isolation is something that tends to happen frequently as students interact with computers, often spending many hours looking at a computer screen instead of discussing problems with others. I will also consider how we can extend human potential and deepen the learning process by looking at the continuum from traditional intellectual learning to experiential learning; from learning in the head to learning as whole beings. I will look at how we can integrate rational learning with creativity and intuition, and carefully reasoned argument with insightful learning. In chapter 3 I will also consider how I believe depth learning occurs in the dynamic that is established as we traverse between our normal, every-day logical/rational intellect (normal, that is in a tertiary, technical learning environment) and a multiplicity of other ways of being. To do this I will describe what non-drug-induced states of consciousness are, drawing particularly on the work of Tart (1978). I will also describe what I mean by transition paths between states of consciousness. Csikszentmihalyi (1979) introduces the concept of “flow of energy”
that occurs when we become immersed in the learning process. I make the connection between flow and transition paths and the fact that depth learning happens on these transition paths. I will consider how to set up an appropriate learning environment in which these paths can be accessed. In order to do this I describe what I understand intuition to be and the methods by which I believe that the intuitive powers of students in a tertiary technical learning environment can be improved. I look at the integration of intuition with rational and logical thought, and I also consider how we can set up our own internal learning community.

One of the things that I struggled with in this research project was to show how a formal structure and framework could be imposed on the research process, while still allowing it to flow freely, flexibly and dynamically, as well as accepting the changes that may occur from one moment to the next, from one class to the next and from one semester to the next. I have decided to use Checkland’s (1984) four core properties of systems-communication and structure, emergence and control - as a framework that provides me with the flexibility that I require. This is described in chapter 4. I will also look at depth learning as systemic and holistic; in other words, including the whole person in community with others. I will look at how the human activity system considered: depth learning in a tertiary technical learning environment is self-organising. Because many of the students involved in this participatory inquiry are familiar with systems terminology, this provides a common intellectual language with which to research participatively.

Chapter 5 considers self in the process. Because my own involvement is reflected in the thesis, and because I believe that all students who were involved in any of my classes out of which this project evolved, have added their personal perspectives, I will consider the role of self in this research process. I will look at the relational self and at how we establish similarities and differences with others, how we establish the outer self and how we consider our individual self, both in isolation and as a healthy inner
self. I will look at how I believe I provide an appropriate role-model to extend human potential and to deepen the learning process and I will also look at the importance of acknowledging the spiritual self in a technical world.

Chapter 6 is devoted to looking at the research methodology for inquiring into depth learning. I look at the characteristics of qualitative research design in general and research methods in participatory inquiry in particular as being an appropriate way in which to research depth learning. I describe how my research is working with small groups, the composition of which changes from one semester to the next, how my research has developed from an interest in depth learning, and how it has been important for me to deepen my understanding of how learning takes place. I look at the impact of the power imbalance that exists in a classroom between students and teacher and I look at the importance of providing an appropriate role-model for me to continue on my own personal path of self-development in being actively and subjectively involved in researching in this way. This is described in chapter 6. I describe the importance of reflection and developing reflective skills in participative inquiry - how our reflections can inform the next action step. One of the most important considerations in developing a co-operative learning community has been my ability to establish, within a semester, a high level of trust with my students. I believe that this trust is essential for depth learning to occur and this is described in chapter 6. We learn in our own, unique way and the importance of honouring the uniqueness of our own way, and the unique ways of others, is described also. For learning to deepen, and if we are to become immersed in the learning process, then we must stay in the moment and not let our minds flit to what happened yesterday or what might happen tomorrow. The importance of staying in the moment for depth learning to occur is also described in chapter 6. As we become actively and subjectively involved in the research process, rather than standing back and viewing it objectively, ethical and moral considerations change. These are considered in chapter 6 as well.
In this qualitative research I have decided to use descriptive and interpretive methods. Therefore it is important for me to describe what I believe the interpretation of data to be. I consider interpretation which is retrospective, interpretation that can be detached, interpretation that is observant and critical, and interpretation that is passionate and completely involved. For me, interpretation has meant that I have had to step back from the immediacy of the learning situation. I will look at the importance of insightful interpretation as well as the necessity for me to honour my individual self in researching depth learning.

In chapter 6 I also consider how the research process has evolved throughout one semester, how evolution has occurred from one semester to the next, within any one unit that I teach and from one unit to the next. I look, also, at the importance of insightful processes as a research tool as well as in deepening learning, both individually and in community. I look at the learning that occurs when we demonstrate to the world and the learning that happens within us.

I will also consider how insightful processes arise in creativity, spontaneity and intuition as well as to the careful analysis of longitudinal data. I will also consider the insights that happen in altered time: the different experiences of time as we traverse from one state of consciousness to another. I consider the importance of insights as emergent properties and outcomes of the research, as well.

My research methodology involves the use of creative writing as a means of exploring depth learning. In chapter 6 I consider how I use creative writing both for my students and for myself. I consider the use of creative writing as a reflective tool, as a means of telling mythical tales and as a means of accessing emotions as we bypass the rational intellect. In chapter 6 I also consider the ways in which I collect data and how important it has been for this project to be as unobtrusive as possible. I believe that data collection has been a transparent process, where the main learning outcomes of
whatever unit I have been teaching have been the focus for the students, not my research aims, although the two are inextricably bound together. So, the data has been collected in the flow of learning about content and, indeed, has enhanced the learning of course content: as stories are written as in-class exercises, as a by-product of assignment work and examinations, as student evaluation of the content and conduct of the class and as informal student feedback. I have also collected data from my own observations, some of which have been recorded in journals and some of which are etched permanently in my memory.

Chapter 7 is devoted to describing what has happened in the classroom to support my claims that depth learning occurs in the dynamic that exists as we traverse transition paths between states of consciousness. I also describe how human potential is extended in a tertiary technical learning environment. I discuss the cultural gap that exists and how I construct the bridges required to span the gap. I look at how I establish the balance between theory and play, between sequential and altered time, between rational intellect and other ways of knowing, between content and process and between functionality and reflection. I also consider the importance of maintaining ethical standards and this is interwoven into the description of classroom practice. In chapter 7 I consider the evolving process for two units throughout this project: General Systems Theory through three iterations and Computer Practice through two iterations. I have chosen these units because they illustrate the biggest difference in adapting my research methods to the learning outcomes of the units. General Systems Theory is a unit that is highly theoretical and reflective and does not have the deadline pressures of Computer Practice, that is practical, tightly-controlled and goal-oriented. The methods used in each unit through each iteration are described in chapter 7. I conclude chapter 7 by considering how a systems framework provides an appropriate meta-structure for this research and I also consider the various roles of self in the process.
In chapter 8 I describe the outcomes of the research project. I look at how I have carried out this research over time, whether measurement is an appropriate concept in an evolving emergent research paradigm, or whether presence, emergence, acceptance and acknowledgment are viable outcomes. I describe how I believe the dynamic between rational/logical intellect and other ways of knowing has been established and how depth learning has occurred because of this dynamic. I will also describe the many other things that have emerged as a result of this research project, for the students as individuals as well as in community, and for myself as both teacher and researcher. Lastly, in chapter 8, I will describe how the systems framework I have used has informed the results.
Chapter 2: Research Background, Context and Structure in a Technical Learning Environment

In this chapter I look at how the research in participatory inquiry in a tertiary technical world is carried out. Besides considering the research conduct and structure, I trace the multi-disciplinary nature of my research and the academic and spiritual background that has culminated in this research project. I consider the research context set in the Faculty of Information Sciences and Engineering at the University of Canberra. Within this faculty the field of work and learning investigated is in information systems, one of the three strands of the computing program. I consider the thinking tasks, the attitude to learning, the social culture and how I introduce experiential learning into a traditional setting, making use of creativity and intuition.

2.1 Research Conduct and Structure

In this section I will describe how and why I have carried out this research and the structure that has evolved for the project. As I delve into how I research extending human potential and the depth learning process, I realise that my research and my work are inextricably interwoven. I am researching lived-experience in a tertiary technical learning environment.

I don't go into every class with an explicit plan laid out and followed. In Polanyi's (1966) words I use “tacit” knowledge rather than explicit knowledge to inform my actions. It is my belief that explicit knowledge would destroy the subtleties of the way in which I teach, learn, reflect and inquire. My primary aim - to extend human potential through learning experientially - is always foremost in my mind when I teach and conduct research on lived-experience. Reflection on each activity will inform the next activity and often the plan remains tacit. I may go to a class with a folder full of content notes. The way in which I present that content may change depending on my intuitive knowing of the classroom situation. In order to be able to rely on my
intuition, I need to spend quiet time each day becoming at ease with my inner self. The busyness of every-day events can interfere with this inner knowing.

Another incredible form of communication I discovered was between my conscious and inner self. This has developed much more during this process of learning . . .

Student Comment (Semester 1, 1995)

This comment indicates to me that this student had internalised the inner skills we practised in class. My belief is that the ability to rely on the insights gained during quiet times is a powerful tool that informs and improves my teaching practice, and thus, in turn, the students' acceptance of, and ability to, extend themselves.

My research is about classroom experience and is carried out in the classroom, and the reflections on these experiences take up a large portion of my time in the classroom, after class, walking between home and work, taking a shower, sitting quietly after a meal or waking each day.

My path through academic research has been multi-disciplinary, involving many different ways of looking at the world and relating to it. In my first degree, an honours degree in mathematics, I explored an intellectual and rational world in the purest sense. I remember experiencing the isolation in studying in such an intellectual domain. I enjoyed the mathematics and the intellectual stimulation. However, there was little or no contact with either staff or fellow students outside of class. There were no group assignments, no workshops and no interactive classes. My experience of this was of a pure, rational world in which the learning did not touch my heart.

Twenty years later, I enrolled in a research masters degree in computer science. My research project was to look at iconic interface design for children learning mathematics through game-playing. Gathering the data for the project was highly
interactive and enjoyable as I observed children at play in learning mathematics. My challenge was to match my theoretical mathematical background with my knowledge of computing gained by working and teaching in information technology for a number of years. When I started to make academic sense of the data gathered, and when I was required to fit the data into a research framework, I found myself retreating into isolation again. The many hours spent scanning the literature, exploring the ideas and designing and implementing the computer programs necessary to demonstrate the use of icons in a learning package for children forced me into isolation. I was studying part-time, working full-time and bringing up an assortment of children - three of my own, two step-children and a shifting population of itinerant street children (my own children used to bring home stray children who needed a bed for a few days). The sheer busyness of such a life forced me into intellectual isolation. There was no time to reflect on what was happening.

Having completed an MSc in Computer Science, I then enrolled in a Graduate Diploma in Social Ecology. To start with I was completely and utterly bewildered by what was going on in this course. I did not know why the residential were organised in such a free-flowing manner. I was confused by the lack of structure. I did not know what it was that I should be doing. I had no idea how to relate to others in any conscious or meaningful way. I wondered, to start with, if I had enrolled in the right course. And yet I was drawn to the course, intuitively and powerfully. Slowly, the confusion subsided. I started to gather some personal skills. I made some wonderful friends, for the first time in any formal study program in which I had ever enrolled, and I learnt the power and effectiveness of observation and reflection. Initially, the observation and reflection was of others, and as I developed, it included looking and considering how and why I reacted and acted in relational situations with others. After taking part in a number of residential, my feelings and understanding shifted from confusion and chaos to stimulation as my intuitive powers developed and my creativity was released. I started to write stories and poetry that gave me considerable
satisfaction. I expressed my ideas through dance and creative sewing. I learnt how to weave creative and analytical writing together as the intellectual and creative parts of my mind became more at ease with each other. I started to take these new ways of knowing and being into my teaching in the hope that I would be able to encourage students to extend themselves in a like manner. I had learnt, and continue to learn, so much more by allowing the creative to coexist with the intellectual. I could see limitless possibilities for the students.

So, this PhD project emerged from a wide-cross-section of intellectual and creative domains both within and outside of academia - in mathematics, in computer science, in social ecology and in the wider personal spiritual development that makes up the person I am. In studying, living and experiencing what social ecology meant to me, I read widely. I did not feel constrained to stay within any one discipline area. Personal development lead me into reading and researching humanistic psychology, and in my spiritual explorations I read all I could lay my hands on. Researching in humanistic psychology and spiritual paths seemed to support my interpretation of social ecology, especially the process of looking within oneself, and the self-observational and self-reflective practices. I also explored intellectually, experientially, spiritually, physically and emotionally along a number of different spiritual paths. My explorations have lead me to a firm and individual belief in the spirit within, an identification with, but not full embrace of, earth-based religions and, an equally firm conviction that there is no such thing as a transcendent, heavenly being. My sojourn along spiritual paths of denial sent me scurrying the other way, firmly convinced that mine was not a path of denial but, rather, a path of fully-embracing the spirit within, celebrating the union with an ultimate mystery. This ultimate mystery I experience as my inner self and not as a transcendent being. Having considered, studied and taken part in paganism in general, and Wicca in particular, I see the beauty of that path, and I also see, in Australia, a political situation that is at odds with Wiccan beliefs in their organisation. The Wiccans believe that the way we should behave is "to do what you will and harm
none." Now, this seems almost hedonistic and self-indulgent on the surface, but the more I think about it the deeper it becomes. The political situation, however, seemed to ignore the "and harm none" part of the maxim. I could not see the integrity I was looking for between Wiccan beliefs and the way in which business was conducted within the Wiccan community in Canberra. Oaths of silence preclude me from saying anymore.

I was brought up as a Presbyterian - we children, my six brothers and sisters and I, went to Sunday school and to church each week. My parents went occasionally. I turned my back on Christianity as a teenager and led a life of spiritual denial until eight years ago. I'm still not sure what lead me back to looking for my spiritual path, but the pull was strong. I learnt to meditate, found myself a meditation guide, did a Taoist enlightenment intensive, did a series of personal development workshops based on the work of Jean Houston, enrolled in the Graduate Diploma in Social Ecology, did an eighteen-month course to train as a Wiccan high priestess, became interested in sacred dance, completed a massage therapist course, learnt Tai Chi, and, finally, became involved with the Human Awareness Institute and the holistic development that they offer, where the entire lived-experience is sacred. It is the complete sacredness of the person I am that I take into the world, wherever I am. Some years ago, when I was teaching my step-daughter's boy friend, he commented on the fact that I was just the same at home as I was in the classroom. One of my personal aims is to maintain integrity by being the same person wherever I am and in whatever situation.

I have also trained as a mediator for the University of Canberra. As my interest and knowledge of people-skills developed, I spent more and more time counselling students, in one-on-one, in small-group and in whole-class meetings. When the University decided to use mediation rather than formal appeal as a means of settling disputes, I jumped at the opportunity to gain some formal training in this area.
Chapter 2: Research Background, Context and Structure in a Technical Learning Environment

My recent readings that have helped me to formalise my qualitative research, have lead me to looking at ethno methodology, phenomenology, human inquiry and anthropology, and other methods which make up participatory inquiry. All of these discipline areas consider people in human activity systems and employ qualitative methods in subjective research. The major difference between these areas and the way in which I research is, I believe, in the importance I place on the integrity I must bring into researching with any group of people. My research will and does change people’s lives. There is an enormous responsibility to assume, and I must be very careful with the way in which I research, especially as some may think that I am playing with people’s minds. If I do not gain the complete trust of the students with whom I work, if I am not completely open and vulnerable with them, if I do not honour each and every student at all times, then I lose my sense of integrity and I am practising human inquiry irresponsibly. If I do not invite participation and feedback on my teaching practices, and show that I respect suggestions offered by discussing, reflecting on and acting upon the ideas put forward, then I lose integrity. If I maintain my positional power in an autocratic manner, then I lose my sense of integrity. These are not considerations required by objective and quantitative research. These are, though, essential considerations for the way in which I research.

My research question started out as a need to explore how we can extend human potential when we learn about, and with, technology. As the research project progressed, so the question changed until it took on its present form - depth learning in a tertiary learning environment can only happen as a result of the dynamic that exists between the dominant, logical/rational, intellectual paradigm and the experiential extension of the boundaries surrounding this domain. Any experiences that suppress the full, holistic expression of our being, whether it be intellectual, emotional, spiritual, kinaesthetic, or any combination of these aspects of our being, alienate us from the fullness of the expression and hence from depth learning.
Because the research question changed with time and with the experience I was gaining in researching beyond the rational in a rational, intellectual domain, so the data collection and interpretation changed, particularly retrospective visits to the data as I write again, late in 1995. Data collection methods are described in chapter 6. I have relied heavily on creative writing, both from the students and from myself. Of particular interest is the creative writing that happens as we traverse the transition paths from one state of consciousness to another. It is here that I have the richest, most complex and the most controversial data. It is in revisiting this data that the insights have occurred about the importance of transitions between states of consciousness.

2.2 Research Context

This research project, extending human potential in a technical learning environment, takes place within the Faculty of Information Sciences and Engineering at the University of Canberra. The University of Canberra handbook, 1995, has the following introduction to the undergraduate course BA in Computing Studies:

The degree of Bachelor of Arts in Computing Studies is designed to produce professionals with computing skills for employment in government, commerce and industry in the information systems, programming, computer hardware and artificial intelligence fields:

Information systems: this area is concerned with the theoretical analysis of information systems, their implementation emphasising computer-based forms and the practical art of systems analysis and design.

Computer programming: This area is concerned with the practical aspects of design, implementation and testing of computer programs, including modern techniques for artificial intelligence programming, and with the theoretical aspects of computer science.

Computer Technology: The area is concerned with the analysis of computer architecture and the practical application of this knowledge to designing digital systems and evaluating computer configurations.

It is interesting to note that nowhere in this introduction are people mentioned. Emphasis is placed on the technical skills taught in the course, rather than on the fact
that students are required to work in small groups, that they are required to develop project management skills and that they are required to develop human-computer interface designs that are acceptable to end-users.

There are three programs within the faculty: the computing program, the electronics, engineering and physics program and the mathematics and statistics program (Figure 2.1). Within the computing program there are three streams: information systems, computer programming and computer technology. My research and teaching is in the information systems stream within the computing program. I have always been concerned about the high failure rates in computing subjects here at the University of Canberra, and the accompanying dread, demotivation and fear associated with getting through a course in computing. It seemed to me that computing students are no different from students in other disciplines. As I listened to students and staff talking about learning in computing, it occurred to me gradually that it might be possible to use the skills and knowledge I gained in completing the Graduate Diploma in Social Ecology in exploring other ways of learning and knowing - not only for students but also for staff. This research shows that students respond well to all forms of experiential learning, no matter how strange the process may seem. My research has been an evolving process. Employing qualitative methods in a world that is steeped in traditional science has always been viewed with suspicion. The faculty of engineers, physicists, mathematicians, statisticians and computer scientists is one where the traditional views of science, both pure and applied, are upheld as the only appropriate view.

Information systems is regarded, by the rest of the faculty, as the "soft" option, because it includes considerations of people in systems, project management, organisational skills, human-computer interface design and technical documentation, besides systems analysis, systems design, computer management and evaluation, data base design, computer audit, and introduction to information systems.
Apart from the technical aspects of systems design and database design, information systems units are concerned with the interaction of people with computers, in the workplace, as personal tools, as organisational adjuncts, and as computing professionals. In information systems, consideration must be given to the social, political and economic impact of computing on the environments in which graduates will be employed. Practical issues, as well as theory and modelling, form a large part of all information systems units, in contrast with the more theoretical material taught in other parts of the faculty.

Within the information systems stream in the computing program (Figure 2.1), I teach and research with the "softest" options in the faculty. In computing, "soft" refers to the areas that are involved directly with people, while "hard" refers to the technology. The machinery is called "hardware", and the programming is called "software". I am involved with the following areas: human-computer interaction, technical documentation, project management, systems analysis, systems design, general systems
theory and introduction to information systems. The database area of information systems is more technical, and more closely aligned with the computer programming and artificial intelligence streams. In this research project I have concentrated on learning in the units General Systems Theory and Computer Practice.

![Figure 2.2: Thinking Tasks in the BA in Computing Studies](image)

Because so much of the emphasis in the faculty is on science and technology, the collective mind-set within the faculty is objective and rational. Figure 2.2 shows the thinking tasks required for the content of the BA in Computing Studies course and Table 2.1 shows the generic thinking tasks required. In most units we require nothing more than a clear, focussed analytical mind - one that does not become bored with
attention to detail. In the third-year project unit, Computer Practice, students are expected to have all the skills required to interact with other people in a small group under pressure, as well as possessing the design skills to create a technical solution. The learning and the way in which human potential is extended is described in chapter 7.

In Computer Practice students create and implement a computerised information system from scratch. Apart from project management, which is in the information systems stream, where the students learn the skills of time-keeping and critical path analysis (in other words, some management techniques that encourage a purely analytical point of view), there is no development of any of the thinking skills required to interact with other people. In the past there has been no development of intuition, creativity, lateral thinking, brainstorming, critical reflection, or any of the other skills that I think are equally important. We had been training narrow-minded, specialist technologists.

This research project has addressed the imbalance in learning and skill development. Students are expected to work in groups, under pressure, to produce software packages that work, with little or no attention given to the skills required for effective group work. Over the past five years my research endeavours have been directed towards improving the human and interpersonal skills required, not just for learning, but also for working effectively in groups.
### Table 2.1

**Generic Thinking Skills**

<table>
<thead>
<tr>
<th></th>
<th>Information Systems</th>
<th>Programming</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rational</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Logical</td>
<td>*</td>
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<td>*</td>
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<tr>
<td>Attention to Detail</td>
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<td>*</td>
<td>*</td>
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<tr>
<td>Consistency</td>
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<tr>
<td>Sequence</td>
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<td>*</td>
</tr>
<tr>
<td>Planning</td>
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<td></td>
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</tr>
<tr>
<td>Analytical</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Application of systems methodologies to problem situation (design)</td>
<td>*</td>
<td></td>
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</tbody>
</table>

### 2.3 Conclusion

In this chapter I have looked at how and when this research project takes place. I have described briefly my social, intellectual and academic background and I have considered the culture within the Faculty of Information and Sciences and Engineering at the University of Canberra in teaching, learning and researching in the Information Systems stream as one of the three strands of Computing.
Chapter 3: Depth Learning in a Functional World

In this chapter I consider how human potential can be extended in a functional world by discussing depth learning and the implications for this extension. I use my classroom experience together with material from the literature to explore the concept of depth learning. I also visit the literature to explore the claim that depth learning occurs in the dynamic between the logical/rational intellect and a multiplicity of other ways of knowing and being as we move along transition paths between states of consciousness. I consider that when a flow of energy is established and we immerse ourselves in the learning task then depth learning takes place. I look at how we access these transition paths. I also consider what intuition is and how we can improve our intuitive powers, as well as addressing the relationship between intuition and rational/logical thought. Lastly, I consider how we can set up our own internal co-operative learning community.

3.1 Depth Learning

In this section I will discuss what depth learning means to me, drawing on my own experiences, on feedback from my students and on research in the field of learning. I will consider the claims of advocates of accelerated learning (Caine & Caine, 1991), cognitive psychologists' considerations of the effect of intrinsic motivation on learning (Deci & Ryan, 1985), educationalists' applications of the theories of intrinsic motivation on learning (Montessori, 1967; Bruner, 1962; Piaget, 1952), the relationship between implicit learning and tacit knowledge (Reber, 1993; Day, 1981; Polanyi, 1966), and the Manifold Learning Theory of Heron (1989) in my exploration of depth learning.

3.2 Towards a Theory of Depth Learning from my Classroom Experiences

It is interesting to note (for me, anyway) that I have gathered the ideas about the learning process and what constitutes effective learning on the job experientially, and without having any theories of learning in place, initially. Heron (1989) maintains that
the experiential learning cycle can have two complementary versions, one that grounds thought in practice and encounter, and the other where thought comes out of practice and encounter. For me, the theory and thoughts about how I develop an effective learning environment have come a long time after the practice. While I reflect on my teaching practices at all times and modify and change them, it has been without a conscious theory in mind. apart from a firm belief that all learning is experiential, including learning how to be an effective facilitator and teacher. I believe that Heron's (1989) model is a very simplistic model of a very complex process. To me, the image of a cycle implies that we travel the same path, rather than learn and progress from the thoughts or the practices. Even a spiral implies a static, single-path process. I believe that the complexity of the learning process, and the skills required to facilitate effective learning defy simplistic models. At the same time, there are some common elements that can be teased out. Because it is important for me to stay in the complexity in a holistic sense, it is with some trepidation that I endeavour to sift out these common elements and consider them in isolation. It is important, at all times, to remember the complexity, even as an isolated concept is considered.

The next important issue for me is that my teaching is grounded in every-day experience. I use the experiences gained over the years, together with my reflections and feedback from students, to inform practices for the next class. It is only retrospectively that I have consulted the educational research literature. I am pleased that I have worked in this way. I have been able to develop my own idiosyncratic and effective practices, that have been overlayed later in comparing my methods and ideas with the theories, models and methodologies of others. This has enabled me to learn how to be at ease with complexity and chaos, and to transfer this skill to my students.

I have discovered that the following thirteen considerations all impact on depth learning. This is not necessarily a comprehensive list. My teaching practices evolve with every class that I take. The practice of the last class informs the next, along with
my accumulated experience. For instance, involvement with students from many more
different cultural backgrounds than normal this year (1995) has highlighted the
influence of cultural background, language, language style, beliefs and values on
learning styles.

1. Depth learning takes place in the transition between logical/rational intellect and
altered states of consciousness. While this is hinted at by the concepts and
practices of accelerated learning (Caine & Caine, 1991; Lozanov, 1978) when they
consider the importance of immersion and relaxed alertness, merely identify these
states as important, without making the claim that depth learning, which they
refer to as natural knowledge, takes place in this transition phase. It is in this
transition phase that the understanding of the flow of energy comes to conscious
awareness for us. Heron (1989) and Deci & Ryan (1985) mention flow as being
important to the acquisition of deep meaning. The term "flow" appears to
originate from eastern philosophy and practices in the consideration of "chi" or
"ki" as the life-force energy. When the chi flows then not only does the mind
acquire knowledge easily, but also the body heals, learns and remembers, with all
the senses being involved in the experience of the moment. Depth learning is
more likely to occur as we relax. Game-playing is an important element in
moving us from one state of consciousness to another: as we laugh and play, we
can learn many things through relaxing intellectual constraints on ourselves.

2. All learning is experiential. Caine & Caine (1991), Heron (1989), Montessori
(1967), Bruner (1962) and Piaget (1952) all identify the importance of
experiential learning. It is my very strong belief that with depth learning, without
the experience, the learning stays as memorisation and the transition to felt
meaning does not take place.
3. Depth learning is felt meaning. It is only when we “feel” the concepts being absorbed, when we immerse ourselves with the ideas, that depth learning take place.

4. Depth learning occurs when we are motivated intrinsically, rather than extrinsically. When we learn because we want to, when we are motivated from within, when our innate curiosity and self-discovery are activated, rather than being motivated by extrinsic rewards and punishments, then depth learning occurs. Indeed Deci & Ryan (1985) maintain that rewards and punishments are detrimental to effective learning.

5. A trusting and supportive environment is necessary for depth learning to occur. I believe that, as a facilitator of effective learning, it is essential for me to establish a trusting and supportive environment. Any threat, fear or lack of autonomy is detrimental to effective learning.

6. Intrinsic motivation is more likely to occur in a trusting and supportive environment. Intrinsic motivation appears to be necessary for depth learning to take place. Without a trusting and supportive environment, intrinsic motivation does not emerge, students respond to the rewards (gaining a passing grade in the unit, getting high marks for assignments) and gear learning to "how to pass the unit", rather than to learning that becomes part of their repertoire of life-long skills and knowledge.

7. Depth learning occurs holistically. We have many senses, many more, I believe, than the five senses identified in a rational world. When we access many senses as we learn, through our body, our emotions, our intellect, and our will, as well as through the psychic and spiritual dimensions of our being, then the chances of depth learning occurring multiply many times over. My teaching practices access many parts of our being, and as a result many pathways to a deeper knowing and learning become available. It is in accessing these multiple pathways that the
transition between the knowing of the intellect and the multiplicity of knowing in many other ways becomes felt and depth learning occurs.

8. Depth learning is more likely to happen as we become more at ease with the chaos and frustration experienced in dealing with complexity. Developing a variety of skills to deal with complexity eases the apprehension in complex situations. For instance, learning about systems, particularly how to think systemically, means that it is less likely that not being able to find one possible solution will cause the same level of distress experienced previously. Apprehension, fear and frustration are all detrimental to depth learning; consequently, developing a familiarity and a set of skills to handle complex situations is conducive to depth learning.

9. Interweaving a conscious awareness of the process of learning with the curriculum being taught also deepens the learning. As we know more about the ways in which we learn, and as this knowledge about how we learn moves from the unconscious or implicit knowledge to conscious and explicit knowledge, so the learning process deepens. In my teaching practices I highlight conceptual shifts in content matter as well as the changes in learning modes.

10. We all have our own unique learning style. Consequently, I believe that it is necessary to employ a repertoire of teaching techniques that will appeal to many different learning styles, to our many senses - particularly those that exist outside of the rational domain - to changes in conceptual level and to methods of presentation. While I believe that depth learning occurs in the transition between logical/rational intellect and altered states of consciousness, there are many transition paths. A path suiting one person, say, silent, individual meditation or Tai Chi, may not suit another. The deep learning may happen in the shower, playing a hard game of soccer, sitting on the bus, eating a meal or remembering a dream. All individuals have their own set of unique transition paths, and by
incorporating a multiplicity of practices that provide access to a number of
transition paths, the learning deepens for larger numbers of students.

11. Depth learning happens as knowledge and ideas are shared. As we share ideas
within the learning community, - supported by an atmosphere of trust - the
synergy and collaboration within the classroom means that the pool of knowledge
and skills available to all members of the learning community becomes greater.
As our ideas coincide or differ from others, so we have the opportunity to reflect
on why this might be. When we share our ideas, we participate actively with
others in the learning community. When we participate actively, the likelihood of
depth learning occurring increases.

12. Developing listening skills is a necessary prerequisite for depth learning to occur.
Each semester, we do some listening exercises in class. For many students it is
the first time that they have really thought about what it means to listen or have
become aware of listening to the multiple voices within their own heads, and how
these voices can interfere with their ability to listen to someone else. Developing
listening skills - both listening to others and listening to the chatter that goes on
within our own heads - is the first step in quietening the mind sufficiently so that
we can listen to others effectively. Without being able to listen to others
effectively we cannot learn, intellectually at least. Learning intellectually is one
component of depth learning. Listening to our own chatter, or lack of it, and
being aware enough to identify and act upon our own insights, is essential to
depth learning. Without any inner listening skills, we do not have the ability to
bring the depth learning that occurs in the space between logical/rational and the
multiplicity of other ways of being, into consciousness awareness. While the
knowledge remains implicit we may act upon it, but not know what it is that we
have learnt, or why.
13. Depth learning is more likely to occur when we have autonomy over our own learning process. As I have developed my skills as an educator, I have evolved from "the person in control of the class" to "the facilitator of self-directed learning". I have handed much of the control for learning back to students. Feedback from students suggests that the empowerment and trust they experienced enabled them to learn far more than they would have expected.

Depth learning, therefore, is more likely to occur as we traverse between states of consciousness, as we learn experientially, as we immerse ourselves in the learning process and when we are motivated intrinsically. Intrinsic motivation is more likely to occur in a trusting and supportive environment. Depth learning is holistic learning that happens when we allow the whole of our mind/body/spirit to inform us. As we become more at ease with chaos, as we become more consciously aware of how learning occurs and as we recognise our own individual style, depth learning is more likely to take place. Also as we learn in community, sharing knowledge and ideas, as we develop our listening skills and as we claim autonomy over our own learning process, depth learning is more likely to take place.

3.3 Research in the Field of Learning

I have carried out this literature review retrospectively. I did not consult the literature before I started experimenting with the ways in which I teach. I am really pleased that I have developed my own way of facilitating depth learning and in so doing extending human potential. I have developed a highly-individualistic, innovative, creative, intrinsically-motivated, constantly-evolving teaching style. In considering a number of different theories retrospectively, I can compare and contrast my ideas in a crisp and clear manner with the theories of others in the field.

3.4 Accelerated Learning Theory

Having attended a two-day accelerated learning workshop (Caine & Caine 1991), I filed the knowledge gained, mentally, and while it may have affected my teaching
practices. I did not go back into the classroom intent on applying the practices of accelerated learning. While the facilitators presented a powerful and dynamic workshop with a multitude of experiences demonstrating the effectiveness of accelerated learning, as well as supplying a comprehensive set of notes and exercises to take back to the classroom, they seemed unsure of the impact of the spiritual and psychic dimensions of the person on the accelerated learning process. There were creative visualisation exercises, music, foreign language and chanting exercises, but it seemed to me that they worked on improving and deepening the learning process and not on how this happened in the psychic or spiritual dimensions.

Caine & Caine (1991) maintain that we can build on experiential learning using three golden rules associated with how we learn. These are that all learning is experiential in some sense; that we need to acquire the art of capitalising on experience; and that the three elements for achieving success at all levels are relaxed alertness as an optimal state of mind, orchestrated immersion of the learner in a complex, authentic and imaginative experience and active processing of experience.

While I believe that these are admirable qualities, I would hesitate to call them golden rules. I agree that all learning is experiential and, indeed, that we need to make sense, apply and transfer experiential knowledge to other situations. However, I think that the third “golden rule” merely skims the surface of some very complex ideas. Caine & Caine (1991) have merely identified the states of relaxed alertness, orchestrated immersion and active processing without exploring why these might be necessary conditions for effective learning to occur. I believe that these three states of relaxed alertness, orchestrated immersion and active processing are precursors for depth learning to take place. However, I have some concern about the concept of orchestrated immersion. It is not clear to me from whence the orchestration comes. Is it self-directed? Is it orchestrated by a teacher in charge of a class? The fact that it might be externally and automatically orchestrated seems to me to be at odds with any
form of self-directed, intrinsically-motivated learning. These three states must be present before any of the concepts that I have discovered through my teaching practices can occur. States of relaxed alertness can be learned and, indeed, I have spent many years refining a variety of meditative practices to enable me to be in such a state of relaxed alertness. I do not believe that this state can be achieved individually, without instruction. It can, however, be achieved easily and effectively with a facilitator or teacher familiar with the practices. I use such practices in my classes effectively. I could not do this if I did not do my daily practices, including meditation and Tai Chi.

Bruner (1962) talks about "felt meaning" and Caine & Caine (1991) suggest that "felt meaning" becomes a component of natural knowledge. They define natural knowledge as information and procedures as well as felt meaning and deep meaning. Felt meaning is described by Caine & Caine as a feeling of relating and the "aha" that accompanies insight. Deep meaning is the purpose, or whatever drives us and whatever we live by. Caine & Caine also suggest that indicators of natural knowledge are spontaneous, appropriate responses, creative and appropriate use of language, asking good questions and solving both expected and unexpected problems effectively. This seems to me to be a mechanistic theory that represents just a small part of what I believe depth learning to be.

Besides surface knowledge (the learning required here is for memorisation) and natural knowledge, Caine and Caine (1991) also identify a third way of learning as "releasing hidden reserves". This is what happens when we are creative and when there is growth in other areas in our lives. They suggest that the key to expansion of natural knowledge and the release of hidden reserves is the appreciation of the interconnections between all skills and subject areas, utilisation of the links between learning, motivation and creativity and the ability to explore the hidden dimension of experience. Exploring the "hidden dimension" of experience tells me nothing about
what that might entail. It seems to me that accelerated learning skills and theory as proposed and demonstrated by Caine and Caine tells us only a partial story of what depth learning entails. I believe that by making the connection between the necessary interweaving of the logical/rational intellect and the myriad of paths we may follow between the intellect and other states of consciousness, we can extend the theory of accelerated learning to offer a further explanation of why and how depth learning occurs.

Caine & Caine (1991) identify their main objectives in accelerated learning as keeping the learning alive, invoking personally-meaningful past experiences, engaging ourselves more fully, deliberately providing multiple points of view, personalising meaning by self-reflection, and creatively and playfully elaborating on what is being taught.

They also suggest that all learning is complex and that a fine balance is required between the simplicity of organisation and the complexity of idea. The challenge of complexity is coping with information overload, having many new skills to master, transferring learning to multiple new contexts, having a need for creativity and flexibility and having a limited time in which to solve problems.

I am in accord with most of what Caine and Caine have put forward in their theory and practice involving accelerated learning. I have reservations, however, with the lack of acknowledgment of the psychic, energetic and spiritual elements of our beings and the important impact that these elements have on deep learning, together with the fact that they have come only part of the way in understanding how depth learning takes place.

3.5 Manifold Learning


Learning I see as having four interdependent forms which in many different ways complement and support each other.
Heron describes practical learning as the learning we acquire when we want to know how to do something. It involves the acquisition of skill and it is expressed in the competent practices of that skill. Heron states that this is the will, including the physical level of learning.

**Figure 3.1 (Heron, 1989)**

Conceptual learning, Heron describes as the learning about some subject matter, learning that something is the case, and it is expressed in statements and propositions. This, he posits, is the intellectual, verbal-conceptual level of learning. Heron depicts imaginal learning as the learning configurations of form and process. Imaginal learning involves an intuitive grasp of a whole as shape or sequence. It is expressed in symbolism of line, shape, colour, proportion, succession, control rhythm, and movement. This is the intuitive, image-level of learning. Experiential learning is described by Heron as the learning encounter, by direct acquaintance, by entering into some state of being. It is manifest through the process of being there, face-to-face,
with the person, at the event, in the experience. This is the feeling, resonance level of
learning. Heron maintains that these four levels of learning are distinct and that they
cannot be reduced to each other. At the same time, he believes that they inform,
support and enhance each other with the levels lower in the hierarchy (figure 3.1),
supporting and grounding those that are higher.

As with most theories that propose a small, finite number of states for a complex
process, I have difficulty accepting that these four states of learning - practical,
conceptual, imaginal and experiential - are separate and distinct and, indeed, that there
are only these four ways of learning. I accept that all learning is experiential and that,
on the surface, imaginal and conceptual learning appear to be separate and distinct but,
for me, my experience suggests that there is a blurring of these distinctions. Do I
experience when I dream? Am I learning experientially when I am in engaged in
practical learning? Are my dreams and concepts inextricably interwoven? I believe
that it is impossible to separate the ways in which we learn, and that it is not possible
for me to make such clear distinctions.

Heron (1989) maintains that we have a need for what he calls "confluent education".
That is, the holistic multi-stranded curriculum that attends to - with differing degrees of
emphasis (depending on the primary learning objectives) - the body, emotions,
intellect, will, psychic and spiritual dimensions of the person. My teaching practices
show me that this multi-stranding can happen within one part of the curriculum in
tertiary technical education and that holism does not need to be split across a whole
course. Heron also states that we need a task and process integration, with which I
concur. The interweaving of human purpose - with a commitment to the external tasks
of learning about the world and how we apply knowledge to it - is necessary.

3.6 Gardner's Seven Intelligences

Gardner (1985) identifies seven intelligences. These are:
Chapter 3: Depth Learning in a Functional World

1. Linguistic. The sort of intelligence that is shown in the extreme by poets.

2. Logical-Mathematical. This is the intelligence that is displayed in science, mathematics and logic.

3. Spatial. The ability to hold on the head a model of the organisation of the world around us.


5. Bodily, Kinaesthetic. This is the sort of intelligence which is shown by dancers and uses the whole or parts of the body to fashion some product.

6. Interpersonal intelligence. The awareness of how we get along with others.

7. Intrapersonal intelligence. The intelligence required to develop self-knowledge.

Gardner also stresses that this list may be incomplete. He also points out that one intelligence is good, but that many working together are better. In isolating these seven types of intelligence, I have difficulty seeing how they operate independently. When I participate in Tai Chi with a large class, even although there is nothing spoken during a session, I am very conscious of the energetic connections in the class. I am conscious of the complex interplay of mind, body, spirit and emotion in refining the form each time I practice, and I have difficulty separating any of Gardner's nominated intelligences. I don't see the seven intelligences informing me about how depth learning occurs, instead they show that we are multiply-intelligent beings. In a tertiary, technical learning environment I believe that the logical-mathematical intelligence identified by Gardner(1985) is trained at the expense of the other six nominated intelligences. In accessing other intelligences I create an uneasy tension in such a learning environment.

3.7 An Uneasy Tension

In this section I consider the dichotomy that I have created by introducing experiential learning into a tertiary technical learning environment. I look at functional versus depth learning, the dilemmas surrounding a change of attitude towards learning in a
functional world, a change of focus from individual to group learning, traditional intellectual learning versus experiential learning, head learning versus holistic learning, the balance between rational and creative learning and the tenison between the careful argument and insightful learning.

3.7.1 Functional versus Depth Learning

With the emphasis on functionality and applicability in computer science, it is inevitable that are a large part of a computing degree will constitute instruction and training on how to apply skills to computer software development. It is equally apparent to me that these skills are learnt rote-fashion, assimilated as assignments are attempted and then lost if that particular set of computing skills is not required again.

In the units in which I teach, students have a greater set of tools with which to apply their knowledge to the world, because I bring the process of learning as well as the technical content into awareness, because students learn about learning as well as about content, and because I provide access to transitional paths between states of consciousness. Only part of their working world will be technically-oriented and yet the emphasis in most of the course is on developing technical skills. Depth learning encompasses functional learning, giving students access to insights into their own process of learning. This, in turn, makes functional learning easier to grasp.

3.7.2 Exploring a Change in Attitude

In my research about my working world, I believe that I have become more successful with each succeeding semester in being able to bring about a change of attitude to learning and a change in attitude to the importance of considering the human side of computing. I have been less successful in convincing my colleagues that I am doing valuable work.
3.7.3 An Isolationist View Versus Learning as a Social Process

Computing students in the faculty are predominantly young, introverted men (I administered a Myers-Briggs personality type indicator survey as a class exercise). Studying a technically-oriented course necessitates many hours of sitting in front of a computer screen, working in isolation. The emphasis on functionality and theory in units taught in these courses, rather than on the social implication of interacting with other people, encourages isolationism. The traditional academic method of delivering functional and theoretical content in units also encourages isolationism. One of my students commented that in doing one of my units, it was the first time she had made any friends at university in the six years she had been studying part-time. The emphasis I place on working with others, and the skill development encouraged in small group work, is a cultural change in a faculty that undervalues such skills.

3.7.4 Traditional Intellectual Learning Versus Experiential Learning

In academia in general, and in computing in particular, the development of the rational, intellectual, clear-focused, analytical mind is paramount. This mind is trained by rigorous argument, complex theory, technical detail and logical analysis. This mind is taught through exposure to traditional lectures, through the application of theories, skills and facts learnt to practical assignments, and through the “hard school of knocks” where students find out for themselves the latest bugs in the software currently being used for assignment work. Because students work in isolation, to a large extent, these “hard lessons” are learnt individually, many times over. I have discovered that by making the whole of the learning process experiential - not just the assignment work, but also the learning that takes place in lectures - by encouraging and refining interpersonal skills so that students are happy to work with others, and by having a larger pool of class knowledge rather than individual student pools of knowledge, students discover for themselves, that through social interaction, the learning process is far more effective and far more enjoyable. However, the dominant
view held by other academics in the faculty is that learning about computing should be hard.

3.7.5 Head Learning versus Holistic Learning

Head learning is not just exclusive to learning about computing; it is the type of learning that is upheld and encouraged throughout most of academia. In using knowledge gained from my experiences in social ecology, in personal development, in massage work, in sacred dance and in Tai Chi. I have discovered that I learn best when I use more of my being. My body can inform my head, just as my emotions can inform my spirit. Then, when all my modalities are aligned, learning for me is most effective. By taking knowledge gained from such a variety of experiences into the classroom, my students learn better. As I read a poem and calm the energy in the room, and as I appeal to emotions in by-passing the intellect, a pathway to depth learning is opened. The learning about the technical content becomes easier as more of each person’s being is opened to receiving information. While it is the intellect that is trained and, indeed, overtrained in computing courses, this access to other parts of our being makes the intellectual training easier.

3.7.6 Rational Learning Versus Creative and Intuitive Learning

As we move along transitional paths, out of the rational mind and into the creative, intuitive mind, insights abound. It is always on the journey back from another state of consciousness that my mind has insights, creative ideas and hunches to follow. Then, when I have returned into my rational mind, I can evaluate the ideas, following up on those that seem of value and discarding the rest. Dreams, visualisations and, indeed, any imagery induced by an altered state of consciousness, can be interpreted by the rational mind, thus providing a balance, and a great source of knowledge and learning that is lost to us if we never venture out of our rational minds. For most of my students these visits to other states of consciousness are the first time that such a
transition path has been traversed with conscious awareness. In this first visit the insights are often the most profound.

One of the problems, it seems to me, if we stayed locked in our rational minds, is that the design work that is required in information systems becomes exceedingly difficult. Information systems are abstract systems, hard to conceptualise and even harder to imagine. This is very difficult work we require of our students, especially if we don’t provide them with the necessary tools to access their creativity. In the units I teach, I provide training in this area.

3.7.7 The Careful Argument Versus Insightful Learning

Careful argument and insights, I believe, go hand-in-hand. The insights provide the spark, or catalyst, for careful argument to follow. Without insight there is nothing for detailed analysis. In most of the units in the BA in Computing Studies, assignment work is neatly laid out, carefully specified, and meticulously evaluated. The messy problems of the world have no place in computing assignments. In General Systems Theory, I provide a balance, a first assignment set out in the traditional manner with the problem spelled out carefully and, usually, a second and final assignment in which the students are required to select their own problem. In doing this the students are required to access their own insightful processes. They are required to deal with the problems that are not neatly laid out. They must establish their own boundaries to the problem. In this way, both careful argument and insightful learning are balanced.

3.8 Learning in the Dynamic Between the Logical/Rational Intellect and a Multiplicity of Other Ways of Being

And I struggle with the question of this dynamic interaction

As I stumble in the dark not knowing where I am

Kay Fielden 11/19/95
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My calls for help unnoticed
as I feel for the gate

Where do I go, what do I do
I cannot find the way

Tears coming fast as
my mind withdraws in fear

Perhaps it's time to sit awhile
stay with the fear and angst

It's the passage back that's hard for me
from pleasures of the other side

Will I ever feel or see or smell
those sensual delights

If indeed I find the way
back into my intellect

And yet, this is what I do so well
for those who come to learn

I show them the way, another way
out into this world so rich

Do they not know the fear, the pain
the dreaded struggle back

Perhaps I show, I clear the way
remove the weeds, the obstacles

Hold the doors and shine the light
place the signs and show them through

This is the way to learn, heart-deep
to take on board, the message felt

The patterns learnt outside of mind
crushed through the door to intellect

Fielden (1995)
In this section I will consider the hypothesis that depth learning occurs in the dynamic created by being in transition between the logical, rational, intellectual mind and any one of many different ways of knowing and being. These different ways may involve experiencing non-drug-induced altered states of consciousness. My belief is that our states of consciousness are complex, multiply-influenced and form a continuum from our perceived (and usually preferred) unemotional, rational way of being, to a wide variety of emotionally-, spiritually- and physically-affected states of consciousness, with the ultimate state being a mystic trance state in which a person perceives her/him self to be in communion with some transcendental being or beings.

I will define states of consciousness and describe them according to my experiences, feedback from my students, and with reference to the literature. I will also explore the link between such states and the impact that this has on our ability to retain knowledge permanently. This section of the writing is highly speculative. I have found it extremely difficult to find reference to such work in the literature. Tart (1978) states that he has found a similar paucity of material in researching the perceptions and experiences of people in transition between two states of consciousness. I will reflect on his work, which is also speculative, and I will relate my reflections to implications for depth learning.

I will consider a variety of transition paths by looking at the end states - our normal state of consciousness and an altered state - and the means by which transition is made in both directions. I will draw on my experience in the classroom in facilitating learning along these paths and the ways in which I have gathered data and gained insight into the importance of these transitional states.

I will also consider the pre-conditions of trust, intuition and a safe environment that are necessary for these transitional paths to be traversed. Once again, I will draw on my own experience in the classroom, on feedback from my students and from the
literature. In order to consider intuition as a pre-condition for transition to take place, I will describe what I believe intuition to be. I will also discuss the relationship between intuition and rationality, and the necessity for these mental states to co-exist in order that creativity and depth learning emerge. I will consider ways in which we can improve our intuitive powers and, in particular, I will look at how intuitive powers can be improved in a tertiary, technical learning environment and how this is linked to depth learning in such an environment.

I will also look at the idea that we can create our own internal co-operative learning community when we have a self-sustaining, self-expanding, internal environment in which to learn, and where we accept, acknowledge, expand and develop the complex ways in which our mind works. I will also consider this, our own internal learning community, in relationship to an external, co-operative learning community with a greater knowledge pool. I will consider what skills are required for both me as a facilitator and for students each in our own individual, internal, learning community. I will also consider the necessary condition for immersion and "flow" to occur on a transition path, and one along which the experience of time alters. Here, I will draw on my own experiences, reflections and feedback from students and on the literature.

3.8.1 States of Consciousness

Our ordinary state of consciousness is a construction that is culturally, emotionally, physically, mentally and spiritually determined. Tart (1978) believes that it is not just a given; it is built up through the socialisation process and, in some ways, it is a somewhat arbitrary construction. He also believes that we need to make the implicit assumptions - that our ordinary state of consciousness is natural and given, and that this ordinary state is somehow best or optimal - explicit. Tart maintains that there is a value continuum where complete rationality is valued highest and where creative states are viewed with ambivalence.
Because our state of consciousness is culturally-determined, none of us will ever develop the full range of our human potential. We grow up in a particular culture, one that dictates part of the spectrum of human potentials available to us. In any particular culture, some of these parts are judged to be good and have value, while other potentials are judged to be evil or bad, and, as such, are repressed. There is also a large number of unknown potentials in a given culture.

Tart (1978) suggests that if we think about human potentials in terms of consciousness, as the kinds of things we experience, we can argue that the states of consciousness that are ordinary are culturally-determined. It is not clear to me whether Tart believes that any altered states of consciousness are also culturally-determined. It seems to me that there must be a cultural influence on all states of consciousness, because my belief is that there is a continuum of such states. Within any one culture there will be individual differences in ordinary or normal states of consciousness and, within one individual, there are many different normal states of consciousness influenced by mood, physical health, environment and relationships with others.

Drury (1985:9) describes altered states of consciousness as:

A state of consciousness different from normal, every-day consciousness, the latter sometimes being referred to as the “consensus reality” on which normal patterns of communication are based. Altered states of consciousness exclude or minimise the external world, allowing subconscious imagery to rise into consciousness. Altered states of consciousness include some types of dreams, trance states, out-of-the-body experiences, mystical states, and hallucinations associated with psychedelic drugs.

I will consider non chemically-induced altered states of consciousness. I will not be considering dream states: while these may have some influence on depth learning, I will confine myself to classroom experiences. I expect my students to stay awake! I don't believe that any of us will achieve mystical states in class. During a creative visualisation, at least one student has experienced an out-of-body experience, another
has experienced physical, sensations, and many have experienced trance states induced through creative visualisation, dance, chant, story telling and poetry reading.

I felt the mind detaching from the body and flying up into the sky and I visited places in Europe that I saw when young. Then I travelled in open spaces seeing mountains and plains. At one moment I felt a strange sensation on my spine.

Student Comment (Semester 1, 1995)

When I went into the room [in the visualisation] I felt a force of wind on me . . .

Student Comment (Semester 1, 1995)

Tart (1978) prefers to use the terms “discrete states of consciousness”, and “discrete altered states of consciousness” as more precise terms with which to work. For the purposes of this study I will continue to use the term “states of consciousness”. My preference is to consider these states, some of which are preferred states of consciousness, individually and culturally, as a continuum. Tart's reason for labelling states discrete is that he believes that each state has its own range of experiences that are related in a certain kind of pattern. Not only is there state-specific behaviour and logic, but also state-specific memories.

While this may be the case and, indeed, if we consider dream states we know that our dreams do not follow the logic of our waking consciousness, I still prefer to consider a continuum rather than discrete states for the states experienced in the learning community in which I work and study. I believe that, because we seem to slide so easily from one state to another, this suggests a continuum. There does not appear to be any other literature to back up this idea. This is my theory and my personal observation of myself and others.

Our state of consciousness is a tool for coping with our environment. For most people, their normal state of consciousness is stable. For some it is too rigid, and for others it changes too readily. The cultural norm in tertiary technical learning
education is for an objective, unemotional, logical, rational state of consciousness. Information is delivered in classes and assessed in this way. Any display of emotion, creativity or intuition is not encouraged and, indeed, an emotional outburst is regarded as a sign of weakness in this male-dominated world. Such a cultural norm encourages rigidity in the dominant state of consciousness. Cultural norms are external stabilising influences, while our current internal state provides another set that enables us to adhere to acceptable social standards. Therefore, our states of consciousness are stabilised in a multiplicity of ways, both externally and internally.

Samples (1976) coins the term "metaphoric mind" for all the other ways of knowing and being which exist outside of our culturally-acceptable logical and rational mind. He says (1976:66):

> When the metaphoric mind is acknowledged, accepted and celebrated, there is no longer a distinction between rational and metaphoric mind. There is only mind.

However, I do work and study within an objective, rational world and my challenge is to gain acknowledgment and acceptance of "metaphoric mind". My students are some way from celebrating these other ways of knowing and learning. They will acknowledge that the learning is fun and that they learn far more than they expected to, but their cultural norm is that learning is a serious business, upon which their careers depend. So, Samples (1976) does not even believe in a continuum of states of consciousness; rather, there is only one state. In my world of work this stage of human development has not been achieved.

### 3.8.2 Transition Paths

Now I wonder if I have painted myself into a corner with my argument. If my belief is that states of consciousness exist in some sort of continuum, how can there be transition paths between them? Surely, I need to acknowledge Tart's (1978) discrete states of consciousness if I am going to consider transition paths. If we consider the continuum as a linear continuum then there is certainly reason to discard my continuum
and adopt Tart's discrete states. However, if I consider a complex, multi-dimensional continuum with many start and end points, then I think there is a case for a multiplicity of transition paths.

I am heartened by Tart's comment (1978:73):

The transition stage between two discrete states of consciousness needs thorough investigation.

He also suggests that it seems possible for people with certain kinds of meditation training to establish an "observing" self that, phenomenologically, is partially or wholly detached from the on-going operation of consciousness. These people, he maintains, can describe in much better detail what happens in one of these transition periods.

3.8.3 Flow of Energy

Csikszentmihalyi (1979) suggests that there is a common experiential state that he says is present in various forms of play and, also, under certain conditions that are not normally thought of as play. He refers to this experience as "flow". He states that flow denotes the holistic sensation present when we act with total involvement. It is the state in which action follows upon action according to an internal logic that seems to need no conscious intervention on our part. We experience it as a unifying flow from one moment to the next, in which there is little distinction between self and environment, or between past, present and future. He has suggested that the working out of creative ideas also involves flow experiences. He has identified the following as elements of the flow experience:

1. **Merging Action and Awareness.** Csikszentmihalyi (1979) states that the clearest sign of flow is the experience of merging action and awareness. A person in flow does not operate with a dualistic perspective. She/he is very aware of her/his actions, but not of awareness itself. The moment the awareness is split, in order to perceive the activity from the outside, the flow is interrupted. My experience
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with flow is that, this may, indeed, be one of the states achieved. I can maintain an "observer" role within and still stay in the flow.

2. Csikszentmihalyi (1979) maintains that flow seems to happen when people face tasks that are within their ability to perform. Once again, this may be one of the situations in which flow happens, and my experience is that flow can occur in situations where I was unaware that I could perform the task at hand (ch5 p89).

3. Centering of Attention. Csikszentmihalyi (1979) maintains that the merging of action and awareness is made possible by a centering of attention on a limited stimulus field. The addition of spurious motivational elements to a flow activity (competition, gain or danger) makes it more vulnerable to intrusions from "outside reality". Ideally, the flow is the result of pure involvement, without any consideration about results. In practice, however, most people need some inducement to participate in flow activities, at least at the beginning, before they learn to be sensitive to intrinsic rewards. Intrinsic rewards have also been identified as a prime motivator in depth learning. Caine & Caine (1991) identify a state of relaxed alertness as necessary to release "hidden reserves". While they don't talk about flow as part of this process, it seems to me that there is a link between accessing hidden reserves and flow.

4. Loss of ego, loss of self-consciousness, self-forgetfulness, transcendence of individuality, fusion with the world. Csikszentmihalyi (1979) suggests that when an activity involves the person completely with its demands for action, "selfish" considerations become irrelevant. He states that a primary function of self is to integrate one person's actions with those of others, being a pre-requisite of social life. Activities that allow flow to happen usually do not require any negotiation since they are based on freely-accepted rules; the person does not need to use the conscious self to get along in the activity. As long as the rules are respected, a flow situation is a social system with no deviance. This is possible only in
activities in which reality is simplified to the point of being understandable, definable and manageable (Csikszentmihalyi, 1979). I have difficulty accepting that flow can only happen under such conditions. My experience in the classroom is that flow can happen in a complex, dynamic learning situation. Csikszentmihalyi (1979) states that what is usually lost in flow is not the awareness of the body or one's functions but only the self-construct, the intermediary, that one learns to interpose between stimulus and response.

5. Control of Action and Environment. Csikszentmihalyi (1979) states that a person in flow is in control of her/his actions and of the environment. When involved in the activity, the feeling of control is modified by the "egoless" state of the actor. It is more a condition of not being worried by the possibility of lack of control. But later, in thinking back to the experience, the person will usually note that for the duration of the flow episode, her or his skills were adequate in meeting environmental demands. This reflection might become an important component of a positive self-concept. In non-flow states, such a feeling of control is difficult to sustain for any length of time.

6. Demands for action and feedback. Csikszentmihalyi (1979) maintains that another quality of the experience is that it usually contains coherent, uncontradictory demands for action and provides clear, unambiguous feedback on a person's actions. These components of flow are made possible by limiting awareness to a restricted field of possibilities. The person is too concerned with the experience to reflect on it. In other words, flow experiences differ from awareness in every-day reality because they contain rules that make action and the evaluation of action automatic and hence unproblematic. It seems to me that this proposition is implying that we use our intuition, rather than rationality, in flow experiences.
7. Autotelic Nature of Flow. Csikszentmihalyi (1979) states that the autotelic nature of flow is one in which there appears to be no goals or rewards external to itself. The various elements of the flow experience are inextricably linked together and are dependent on each other. By limiting the stimulus field, a flow activity allows people to concentrate their activity and to ignore distraction. As a result, they feel in potential control of their environment. Because the flow activity has clear and non-contradictory rules, people performing it can forget temporarily their identity and its problem. The result of all these conditions is that the process is intrinsically rewarding. I think that this proposition is limiting. It is the flow itself that is so important. It is the flow that is the soul connection, and the activities that set the scene for flow to occur. When a person is aware of what flow is it can happen at any time. My aim is to be in flow, to feel the life-energy, the "chi" coursing through me at all times. I have not succeeded in maintaining a continuous flow experience, though I am "in flow" much of the time.

Dancing in the Spring

At the still point of the turning world
Neither flesh nor fleshless
Neither from nor towards
At the still point, there the dance is.
But neither arrest nor movement
And do not call it fixity
Where past and future are gathered.
Neither movement from nor towards
Neither ascent nor decline.
Except for the point, the still point,
There would be no dance,
And there is only the dance.

Eliot (1963)
3.8.4 Exploring the Paths

If we all have our own individual transition paths upon which depth learning takes place, how can I, as the facilitator of the learning process, access these individual transition paths of my students? Is there a finite number of paths that we can share? Is it the setting up of a trusting and supportive learning community that enables access to these transition paths? Is it my responsibility to make sure that students do indeed learn in a deep and life-long manner, or is it my responsibility to facilitate the process to the best of my ability? My commitment, dedication, enthusiasm and motivation as a teacher is to facilitate access to these transitional learning paths. That is all I can do, nothing more.

3.8.5 How do We Access Transition Paths?

In order to discuss access to transition paths between states of consciousness, it is important to discuss the role of intuition in allowing us to open the gates to other ways of knowing.

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When I walked into that class
  - the very first one
When I tried something new
  - not just read from the notes
When I was greeted with shock
  that they needed to think
That was the hardest
  - the very first time
Then as we moved
  from one class to the next
And the lessons became noisy
  as everyone talked
As I learnt the rules
  for interaction to work
As I became brave
  and directed the flow
We all relaxed
  and the learning occurred
The learning that touched
  the depths of our souls
The learning remembered
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3.9 What is Intuition?

How do I know
so much all at once

Is it a hunch
or just a wild guess

How do I tune into
a greater awareness

The knowing I know
without really trying

Zukav (1990:85) suggests that:

Intuition is perception beyond the physical senses that is meant to assist you. It is that sensory system which operates without date from the five senses.

While Vaugan (1979:3) states that:
Intuition is known to everyone by experience, yet frequently remains repressed or underdeveloped. As a psychological function, like sensation, feeling and thinking, intuition is a way of knowing. When we know something intuitively, it invariably has a ring of truth, yet often we do not know how we know what we know.

Goldberg (1983:31) maintains that:

Intuition is the act or faculty of knowing directly without the use of rational processes.

Goldberg defines intuition with respect to anything that is knowable, including vague hunches and feelings about mundane matters, significant discoveries of concepts and facts and divine revelation. He also states that intuition is a style of functioning, relatively loosely-constructed, an informal approach to problems that contrasts to the more deliberate, systematic style of rationality and analysis. Intuition is characterised by spontaneity and immediacy, and is not mediated by a conscious or deliberate rational process. We use our intuition when we know something without knowing how we know it.

So, intuition is often defined in terms of what it is not. It is not rationality and it is not mere observation. While rational thought is drawn out over time - is a deliberate sequence of linear steps and requires effort and deliberate intention - intuition is experienced as non-sequential and as a single event.

Intuition just seems to happen, often when it is least expected. Intuition is inexplicable. Intuition and rationality work together. Intuition turns us in the right direction - toward meaningful information and the starting point of rationality. Intuition is different from irrationality. In other words, intuition is not the opposite of rational. Intuition is the product of the mind's capacity to do many things at once without being aware of them.

Zukav (1990:86) suggests that intuition serves many purposes. These are:
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1. Intuition serves survival. We have hunches about danger, which help us to remain in the physical world;

2. Intuition serves creativity. It is the sense that an idea that has never been tried before will work; and

3. Intuition serves inspiration. It is the sudden answer to a question. It is the meaning that takes form in the fog of confusion. It is the light that comes from the darkness. It is the presence of the Divine.

Zukav (1990) suggests that intuition can be thought of as a type of wiring that can be used by various sources. One of these sources is the soul. Intuition is the connection with our everyday person and the soul.

Jung (1962) defines intuition as one of the four basic psychological functions, the other three being thinking, feeling and sensation. He characterises intuition as the function that explores the unknown, sensing possibilities and implications that may not readily be apparent. Intuition perceives what is hidden, and enables us to perceive obscure meanings in symbolic imagery, or subconscious motives in the self and in others. It is also associated with insight, or with the ability to understand the dynamics of a personality or a situation.

Vaughan (1979:53) states that:

In choosing to share the process of awakening intuition for example, you may make it easier for others to do the same.

As a teacher and a facilitator of depth learning, and as a person who has been able to unlock my own intuitive powers, I see my added abilities as being able to set the scene to unlock intuition in others.
3.10 How We Improve Our Intuitive Powers

Vaughan (1979:203-205) suggests the following guidelines for awakening intuition:

1. Intention. The first requirement for awakening intuition consciously is a clear intention to do so. Intuition is already within you, but to awaken it you have to value it and intend to develop it. My experience, and comments from my students, suggests that for some - who are sceptical about other ways of knowing and learning - the intention is not in place first, and that they do, indeed, develop intuitive powers, albeit reluctantly by being exposed to the ideas and methods over a semester.

2. Time. Your willingness to devote time to tuning into your intuition, making a space for its unfolding in your life, is part of valuing and developing it. I take time out each day to practise meditation, Tai Chi and quiet reflection by myself. By providing an appropriate role-model for students and by talking about the importance of these practices for me, I bring them into conscious awareness. I do not teach such practices in a technical tertiary setting; I just provide the role model. Neither do I expect any of my students to take up such practices. I see my role as showing the possibilities of other ways of knowing and learning.

3. Relaxation. Letting go of physical and emotional tension gives intuition the space to enter your conscious awareness.

4. Silence. Intuition flourishes in silence. Learning to quieten the mind is, therefore, part of the training for awakening intuition. Various meditative practices are useful in learning to maintain the necessary inner silence. During the classes we practised inner-listening exercises, sitting in silence to listen to what goes on inside our heads. Invariably, the amount of inner chatter, judgement, negativity, wandering thoughts and lack of focus are commented on. One student, in his feedback at the end of semester, suggested that we do more such exercises.
5. Honesty. Willingness to face self-deception and to be honest with yourself and others is essential. Creating any kind of smoke-screen interferes with clear vision. Giving up pretences is a big step in awakening intuition.

6. Receptivity. Learning to be quiet and receptive allows intuition to unfold. Too much activity or conscious programming gets in the way of the intuitive awareness which emerges when a receptive attitude is cultivated.

7. Sensitivity. Finely-tuned sensitivity to both inner and outer processes provides more information and expands intuitive knowing. Sensitivity to energy awareness and the quality of experience is useful. One of the gifts that has developed for me as I have practised my inner skills is the ability to tune into, and to decipher, the energy vibrations of others. This is an invaluable tool in the class room. Often, I do not need verbal or written feedback on the learning which takes place. The way in which I interpret the energy will give me all the feedback I require.

8. Non-verbal play. Drawing, music, movement, clay and other forms of non-verbal expression practised in a spirit of play, rather than for the purpose of goal-oriented achievement, provide excellent channels for activating intuitive functions. The importance for depth learning of the introduction of such activities into a theoretical course was appreciated by at least one student:

Learning in the form of games, meditation, story listening, creative visualisation and poetry-hearing was refreshing.

Student Comment (Semester I, 1995)

9. Trust. Trusting the process, trusting yourself and trusting your experience, are the keys to trusting and developing your intuition. For me, setting up a trusting environment is essential for depth learning and for intuition to be acknowledged and trusted.

The environment of trust and sensitivity meant I was not scared to offer an opinion, present a view or to ask a question.
10. Openness. If you are afraid of being seen, you may close up and then be unable to see. Being open to all experiences, both inner and outer, gives intuition the space it needs to develop fully. My displays of openness and vulnerability encourage my students to open up as well.

Your displays of openness, vulnerability and sensitivity created an ambience that was embraced by the students.

11. Courage. Fear gets in the way of direct experience and often generates deception. Your willingness to experience and confront your fears will facilitate the expression of intuition. When an atmosphere of trust is set up in a learning community, the fear dissipates. It seems to me that it is the trust that must be there to ease out the fear. One of the most satisfying things for me is the way in which ESL (English as a Second Language) students have lost their fear of speaking out, both formally in presentations and informally in class.

12. Acceptance. A non-judgemental attitude, an acceptance of things as they are, including self-acceptance, allows intuition to function freely.

It (the course of study) also taught me to “listen” to my intuition more. I’ve always questioned my intuitive knowledge, and probably wasted a lot of time “proving” right what I already knew was right.

13. Love. Opening your heart to feelings in a non-judgemental love and compassion allows you to see into the nature of things. Emotional empathy and intuitive identification are facilitated by love and compassion. Because I go into the classroom with enthusiasm both for the content matter as well as a dedication to trying to improve the learning for the students, a lack of judgement on the quality and
ability of students, compassion and empathy for learning that is considered
difficult, theoretical, dry and functional. I believe that this encourages the trust to
be present, the learning to be present, and so the students in turn learn to trust
themselves.

14. Non-attachment. The willingness to let things be as they are, rather than trying to
make them be the way you would like them to be, or the way you think they
should be, allows intuition to emerge. You can see things as they are only when
desires and fears are out of the way. I believe that this is very difficult to achieve.
In a learning environment, we are learning new concepts that will, indeed, change
the way we are as we learn more, as our thinking matures and as our store of
knowledge and wisdom grows. It is very easy to become attached to a set of
ideas and to a certain inflexibility about the way we are.

This semester, I became aware of my unwillingness to embrace new concepts.

Student Comment (Semester 1, 1995)

15. Daily Practice. Intuitive awareness grows with daily attention. If you discount or
neglect it most of the time, and only want to perform occasionally, it may not
respond. I do my daily practice. I do not, for I do not have the right to, insist on
students doing any sort of daily practice. This is very much a personal decision
and responsibility.

16. Journal-keeping. Keeping a record of intuitive flashes, hunches, insights and
images that come to mind spontaneously, at any time of day or night, can help
stabilise and validate them. I am a regular journal-keeper. I encourage my
students to be the same.

17. Support Group. Finding a few friends with whom to share your interest in the
development of intuition, as well as your successes and failures and hopes and
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fears, can facilitate and accelerate the process of development. Sharing experience with someone who is willing to listen, without judging or interpreting, is very useful. One of the fascinating things that happens each semester, as students open up to other ways of knowing and being, is the common comment that they have made some really good friends during the course of the semester, not only for insightful work, but also as a general support network.

18. Enjoyment. Following intuition does not always feel good. At times it may seem difficult and involve hard work. At other times it may seem effortless. Enjoying the creative resources of intuition is based on the intrinsic satisfaction of expanding consciousness, taking responsibility for your life and surrendering to your own true nature.

My experience in this unit was a joyful one.

Student Comment (Semester 1, 1995)

Zukav (1990:132) states that:

Decision-making can be an intuitive process, in which you pull data from your mind, your heart and your intuition, relying upon the guidance of your inner self.

It seems to me that if we remain inflexibly and determinedly in our rational intellect, and if we accept this as our normal and preferred state of consciousness, then there is no way in which we can explore the paths between any other state of consciousness. Even as we acknowledge the complexity of individual states of consciousness, influenced by mood, environment and health, so we have our preferred state of consciousness; that is, the one we seek to achieve. I know that if I have a migraine, or a bout of influenza, or if I am upset, then my state of consciousness is not my preferred, calm, clear-thinking state. I rest, sleep or meditate to travel back to my preferred state.
Chapter 3: Depth Learning in a Functional World

If we accept the knowledge gained from intuition and insight, then we have prepared ourselves to move effortlessly along the paths between any two states of consciousness. My insights occur most frequently as I awake in the morning, in those moments as I drift into normal consciousness, as I come out of a deep meditative state, as I return from a massage-induced trance, or as I complete the Tai Chi form. The depth learning for me happens on the return journey to my normal state of consciousness. One of my students commented that he often has flashes of inspiration and writes poetry as he is going into a sleep state. For him the depth learning has occurred as he leaves his normal waking state. For my students, as they return from a creative-visualisation-induced trance, the learning happens as they record their thoughts and insights on the path back to logical and rational thought. In most of the alternative activities in the class room, it is on the journey back to the normal state which the depth learning takes place, whether it be game-playing, chanting, dancing, inner listening, sitting in silence or listening to stories or poetry. On an energetic level, as the class becomes still and focussed, my intuition tells me that depth learning has, indeed, taken place.

3.11 How Does Intuition Work With Rational/Logical Thought.

Sidestepping the mines
Avoiding the traps
Transcending the rational
Is this what I do?

Fielden (1993)

Intuition does not come from nowhere: - dogged, rational work in preparation is of extreme importance.

Our knowledge is contextual before it extends to causality; and it grows on both dimensions half-independently.
Rational thought is drawn out over time. It takes place in a definable sequence of steps. It has a clear beginning, middle and end. It is linear. It requires effort and deliberate intention. Intuition is consequential, a single event (as opposed to a series of steps), a snapshot - not a moving picture. It just seems to happen without the application of specific rules. It is often inexplicable (but reasoning is often applied retrospectively).

Rationality precedes and follows intuition. A useful division of labour is to reason, gather and analyse facts, then allow an intuitive breakthrough to happen, then to reason and analyse - but sometimes it works differently. Rationality and intuition are symbiotic. Perhaps intuition tunes us into the right direction, toward meaningful information and the starting point of reasoning. There is a need for balance between, and recognition of, the intricate, mutually-enhanced relationship between intuition and rationality. As I listened to my students giving their views on a research experiment conducted the previous semester, I allowed the story to sit in my mind, feeling the concern over ethical issues, not consciously relating the story to anything else. As I awoke the next morning the ideas about what happens to emotions when they first are denied and then suppressed started to emerge - very haphazardly at first. Then my rational mind took over as I developed the ideas about emotions and their place in systems theory, participatory inquiry and learning. The real relationship between intuition and rationality is richer and more complex than is generally realised and applying the label "intuitive" to specific experiences is frequently difficult and sometimes arbitrary. Intuition can elevate rational knowledge to a higher level of both appreciation and conviction through some ineffable combination of feeling and experience.
Here we have another dilemma. Intuition involves letting go of rational thought, and technical education is about refining and perfecting rational thought. Bertoni (1985:315) discusses intuition this way:

My human intuition tells me that the reason computers so far outstrip us in the performance of merely logical operations is that they are not encumbered with imagination, insight and intuition.

If we consider this quote from the point of view of people, it seems that the reason why people have problems trying to come to grips with what creativity is all about is that the creative process does not fit into any sort of rational or logical model (Gilchrist, 1972; Altshuller, 1984) because it is largely subjective and intuitive and relies on insight. These qualities defy measurement and logic.

What can be done, however, is to form an understanding of the whole process. The scientific model of the world belongs with the rational or logical way of thinking, about cause and effect, about having one answer and about problem solving. Even if heuristics are used to solve problems, it is still a rational process. Another important issue is that when a person generates a new idea it is inevitable (in the dominant paradigm) that she or he also takes a stance in favour of that idea (Lanzara, 1983). It seems that it is impossible for any person to be completely objective, particularly when a new idea is regarded as having private ownership. Rules, skills and knowledge of a specific discipline are thought to be constraining, locking one into the prevailing conceptual framework.

Once, when I was stuck and the words had disappeared, I kept seeing the images of what this piece of research was about. It was so frustrating - I could see the pictures and the symbolism, but I could not find the appropriate language. And this crazy quilt started to emerge. First, I did some drawings, and the form of the quilt began to emerge. The third drawing was concrete enough to serve as a pattern for the quilt. I spent the next three days assembling just the right scraps from my collection of bits and
pieces, the gold and silver threads to outline the shapes and provide the connections, the wadding to pad it, the backing-cloth to hold it together and the interfacing to make appropriate pieces stiff. What I made was a quilt in which the dynamic complexity of what I was trying to verbalise, represented in a myriad of colours, shapes, textures and sizes, and all connected by a continuous, meandering silver web, was held down and repressed by the angular black shapes connected by straight lines to a rectangular control - all outlined in gold. Silver is the symbolic colour for the goddess, gold the colour of the gods and black the colour of oppression. It seemed to me that the repressive patterns of the top, flat layer, were the repression of the dominant paradigm, of the patriarchy and of hierarchical structures. The lines of communication were limited, represented by the straight lines all coming from a central, controlling point. It was as if the dynamic richness of the underlying, soft, meandering patterns had to be controlled.

I realised that my ideas - the words that had disappeared - had emerged in a quilt and, as I was working and stitching and padding, each piece of material from the past had its own story: my daughter's year-twelve formal dress black water-wave taffeta; scraps from a red satin shirt that has been my favourite for years; green curtain material from the house in which we lived in Melbourne when my children were babies. Each scrap symbolised its own story - a story that now extends into the future as new patterns emerge. It was as if the subtleties I could not find the words to express emerged in this work of art. It is interesting to note that I am reluctant to put the quilt into any sort of frame to hang on the wall. Somehow, it would constrain the fluidity. The quilt does have a structure but there is also the mix of chaos and order that is representative of the dynamic complexity in which I endeavour to stay grounded as I honour my sense of the divine in finding my way to becoming a more integrated human being as I set the scene for others to extend their human potential. Making the quilt served its purpose in allowing the words to flow again.
Chapter 3: Depth Learning in a Functional World

'Tis reason we have
to work out the rules

The rules which applied
when living was easy

Now things are changing
constantly, complexly

Now we are faced
with uncertainty

Is it rules that we need
or leaps of the mind

How do we capture
the wisdom required

Fielden (1993)

3.12 Our Own Internal Co-operative Learning Community

Learning to accept, acknowledge and honour our intuition as well as our rationality means that not only have we provided access for ourselves to the transition paths to other states of consciousness - where depth learning takes place - but also we have expanded our own human potential. We are using more of ourselves in gaining wisdom and knowledge. Leslie (1986:434) says:

We can prepare ourselves by not only doing the necessary logical, intellectual work concerning the facts of a problem, but also by being open to other ways in which the mind can work, such as seeing nonverbal patterns of whole systems and seeing how fixed ideas can be inverted or otherwise altered to achieve a new view, a new concept, a new metaphor.

Silently, passively
unfound in the dark

Rough and dull-edged
not knowing, not caring

Then a boulder rolled off

Kay Fielden 11/19/95
Chapter 3: Depth Learning in a Functional World

land-sliding the rest

Tumbling, turning
chaotic, confused
and out of control

First fighting the tide
then accepting the thrill

Sheen-polished and smooth
now gems in the sun

Fielden (1995)

3.13 Conclusion

In this chapter I have considered how human potential can be extended in a functional world. I have described depth learning and how intrinsic motivation can be used as a measure for depth learning taking place. I have used material from the literature to describe depth learning. I have also described the transition paths between states of consciousness and how these are connected to depth learning. I have considered flow of energy and its relationship to depth learning. I have described intuition and the relationship of intuition to rational/logical thought, as well as the importance of accessing intuition for depth learning to occur.
Chapter 4: A Systems Framework

I have decided to use a systems framework to describe the environment in which I work, teach and research. A systems framework gives us a thinking tool that provides a meta-structure, a birds-eye view and a context for fitting things together. Anything can be viewed as a system, from a single cell to a whole society, an isolated storm to global warming. Checkland (1984) suggests that systems can be abstract or concrete - a belief system or a bridge. He also suggests that systems exist because they are perceived by a human being.

The system that I shall be considering in investigating depth learning in a tertiary technical learning environment is a human activity system. I believe that human activity systems are the most complex and the most interesting systems to study. While there are a number of ways in which to categorise systems, including Boulling’s (1956) nine-point scale (table 4.1), Checkland’s (1984) four-point scale (table 4.2), and a standard way of classifying systems as open or closed, hard or soft (table 4.3), I have chosen to use Checkland’s (1984) four core properties of emergence and control, communication and structure. Checkland (1984) suggested originally that hierarchy rather than structure was the term to be used for the fourth property, but in a more recent publication (Checkland & Scholes, 1991) he has adopted the term “layered structure”. It seems to me that while hierarchy is, indeed, a common structure in our western culture, it is also a term that is value-laden when we consider human activity systems. For this reason I prefer to use the more general term “structure”.

The very best use of soft systems methodologies seem always to exhibit a certain dash, a light footedness, a deft charm. In this sense the role of the approach is akin to that of the cavalry in nineteenth century war; it can add a certain tone to what might otherwise be a vulgar brawl.

Checkland (1990:302)
I have also decided to take a soft systems view, as the most appropriate way of looking at my particular human activity system is viewing the world systematically - systemic thinking is a disciplined way of thinking that means we consider whole, connected structures that can be organised dynamically and flexibly.

Table 4.1

<table>
<thead>
<tr>
<th>System Type</th>
<th>Example</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Static structures</td>
<td>frameworks, anatomy of the universe</td>
</tr>
<tr>
<td>2</td>
<td>Simple, dynamic structures</td>
<td>predetermined, necessary motions, e.g. the working of a clock</td>
</tr>
<tr>
<td>3</td>
<td>Control mechanisms or cybernetic systems</td>
<td>e.g. a thermostat, a self-regulating device that maintains equilibrium</td>
</tr>
<tr>
<td>4</td>
<td>Open systems, self-maintaining structures</td>
<td>life is differentiated from non-life, e.g. cell structures</td>
</tr>
<tr>
<td>5</td>
<td>Genetic and societal systems</td>
<td>typified by plants</td>
</tr>
<tr>
<td>6</td>
<td>Animal systems</td>
<td>increased mobility, teleological behaviour, and self awareness</td>
</tr>
<tr>
<td>7</td>
<td>The human system</td>
<td>each human is a system with self-awareness and the ability to use language and symbolism</td>
</tr>
<tr>
<td>8</td>
<td>Social systems</td>
<td>the characteristics of these are communication, content and meaning of message, nature and dimension of value systems, transcription of images into historical record, the subtle symbolism of art, music, poetry and human emotion.</td>
</tr>
<tr>
<td>9</td>
<td>Transcendental systems</td>
<td>the concept of higher beings, beliefs, and other states of consciousness constitutes this type of system</td>
</tr>
</tbody>
</table>

One of the important outcomes of systemic thinking is the ability to recognise emergent properties - those properties which are not apparent when the structure is
analysed and considered piecemeal. The intensity and passion of student discussions generated after classes is something that emerged from the whole process - it was not something that I expected to happen. I have found it difficult to maintain a systemic view in the wider systematic environment in which my research is situated. Many times, the temptation to fall back into an autocratic and rational mode, rather than an empathetic and intuitive mode, has been present. While a balance on a continuum between unemotional rationality and insightful empathy is required, I find it all too easy to take on the values and attitudes of the dominant culture in which I work.

Table 4.2
Checkland’s Four-point Scale

<table>
<thead>
<tr>
<th></th>
<th>system</th>
<th>example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>natural system</td>
<td>mountain range, eco-system</td>
</tr>
<tr>
<td>2</td>
<td>designed physical system</td>
<td>car, transport system</td>
</tr>
<tr>
<td>3</td>
<td>designed abstract system</td>
<td>information system</td>
</tr>
<tr>
<td>4</td>
<td>human activity system</td>
<td>legal system, education system</td>
</tr>
</tbody>
</table>

Table 4.3
System Classifications

<table>
<thead>
<tr>
<th></th>
<th>System</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>hard</td>
<td>systematic, methodological, planned theoretical system applied to the world, end-product oriented, objective, unemotional</td>
</tr>
<tr>
<td>2</td>
<td>soft</td>
<td>holistic, systemic, process-oriented, emergent properties important</td>
</tr>
<tr>
<td>3</td>
<td>open</td>
<td>has both inputs and outputs</td>
</tr>
<tr>
<td>4</td>
<td>closed</td>
<td>has no perceived outputs</td>
</tr>
</tbody>
</table>
Human activity systems are different crucially from natural and designed systems, which cannot be other than what they are. Human activity systems are manifested only as perceptions. Therefore, there is never a single (testable) account of a human activity system. The set of possible accounts is all valid according to a particular world view. When we consider that systems are only there because they are perceived by human beings, then it suggests to me that all systems are human activity systems.

4.1 Core Properties of Systems

Checkland (1984) maintains that there are four core properties of systems. These are communication and control, hierarchy and emergence.

4.1.1 Communication

Communication is the transfer of information. Within the formal academic structure, communication in the lecture theatre is one lecturer in front of many students. Traditional academic communication in my world of work is a one-way process, with interaction or communication from student to lecturer being actively, and culturally, discouraged. This communication pattern is recognised formally in a tertiary technical education and is accepted by many staff and students as the way in which the content of courses is delivered. In my experience, the implications for such communication patterns are that students feel isolated, feel alienated from staff, remain passive mentally and are fearful of being put-down in class if they communicate with the lecturer. There is also a lack of trust in fellow students, through isolationism and in staff because of the perceived power difference between students and lecturer. Internal communication, the process of active listening within, is dulled by becoming a passive listener to one-way communication. Students disengage from the content and the line of argument and become bored and disruptive, or go to sleep. I have found that by setting up a two-way communication pattern in lectures, with well-defined guidelines, a dynamic and active learning environment can be established. While this structure is less formal than the one-way communication described above, it is still directed, the
guidelines on communication are set out (Table 4.4), the dialogue is focussed on the content being discussed and the process is directed and facilitated by me. New topics are discussed in this way, helping to establish a common pool of knowledge, and feedback sessions are debated in the same manner. One result from setting up such open and dynamic sessions is that a trusting and supportive environment is established in which many more points of view can be heard, honoured, stored and assimilated into each individual’s pool of knowledge and skills.

Table 4.4
Guidelines for Open Communication in Lectures

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discuss the current topic only</td>
</tr>
<tr>
<td>2</td>
<td>Honour the speaker by listening to her or him</td>
</tr>
<tr>
<td>3</td>
<td>No other discussions take place at the same time</td>
</tr>
<tr>
<td>4</td>
<td>Everyone has the opportunity to speak</td>
</tr>
<tr>
<td>5</td>
<td>I facilitate and direct the process</td>
</tr>
<tr>
<td>6</td>
<td>Address the topic, don’t attack the person</td>
</tr>
<tr>
<td>7</td>
<td>Offer positive and constructive feedback first</td>
</tr>
<tr>
<td>8</td>
<td>Opinions, emotions and judgements as well as facts are legitimate</td>
</tr>
<tr>
<td>9</td>
<td>Two-way communication times are clearly delineated from normal one-way lecture mode</td>
</tr>
<tr>
<td>10</td>
<td>Anyone can request a discussion on a course topic at any time</td>
</tr>
</tbody>
</table>

4.1.2 Control

Control is described as the process by which a whole entity retains its identity and/or performance under changing circumstances. In the human activity system which is the subject of my research, control can be viewed as explicit or implicit, external or internal.
4.1.2.1 External controls

External controls are controls imposed by the wider academic community - the time and place of classes, academic rules at the university, faculty, course and individual unit levels. External controls tend to be inflexible, requiring protracted discussion at committee level, or appeal at student level, to be changed. The only external control where I have been able to make changes within the time frame of one semester is at the unit-rules level. Unit rules are discussed openly in lectures. By making the distinction between levels of control and the procedures by which change can take place, students have a much clearer mental model of the environment in which they study. Raising the level of awareness removes individual doubts, worries and frustrations about imposed control.

4.1.2.2 Internal controls

Internal controls are the controls we place upon ourselves. These self-imposed, self-disciplined controls enable us to be physically, mentally, emotionally and spiritually present and prepared at the time and place where learning takes place. We can be physically present and not engage in the course material being discussed; however, if we make the commitment to be present in all dimensions of our being, then we are much more likely to engage with the material, we are much more likely to be motivated to learn, and we become more skilled at focussing our minds on what is being discussed. While the main emphasis in a tertiary technical learning environment is on training the rational mind, it is when our other senses are engaged that depth learning is more likely to take place.

4.1.2.3 Explicit Controls

Explicit controls are the stated rules, class times and places, class materials required and the scope of the unit. All external controls are explicit controls. They are all written down, and they are all formal procedures. While external controls may not be explicit to each individual student, because of her or his lack of knowledge about them,
they become explicit as the level of awareness in the class about control mechanisms is raised.

4.1.2.4 Implicit Controls

Implicit controls are controls placed on us by the culture in which we live, by expected behaviour patterns and by attitudes and beliefs. We have implicit controls placed on us at a society level, at an academic level, and at an individual level. By the time students reach the third year of their undergraduate course (the level at which I interact with them), these assumed or implicit controls are firmly in place. It is because I have gone outside of the assumed or implicit controls of accepted behaviour as an academic in front of a class, that I have been able to explore beyond the boundaries of these implicit controls. Because I have questioned the effectiveness of the traditional one-way, autocratic lecturing style, and because I have developed a two-way communication pattern in lectures, I have been able to dissipate some of the myths about “how lectures should happen”. This has been described by some students as a breath of fresh air.

4.1.3 Structure

Checkland (1984) describes hierarchy as the principle according to which entities, meaningfully treated as whole, as made up of smaller entities which are themselves wholes . . . and so on. In a hierarchy, according to Checkland, emergent properties denote the levels. Because I have decided to use the wider-term structure rather than hierarchy, I question this seemingly-narrow view of how levels in a hierarchy are denoted. The discussion on emergence follows in the next section. Figure 4.1 shows how the dynamic between formal structure and the pushing out of the boundaries coexists. Structure in the human activity system (depth learning in a tertiary technical learning environment) is linked closely with all forms of control. Structure implies boundary and boundaries are maintained and/or changed by the effect of controls. The structure of any system is coloured by the environment in which it resides. My research area is affected by the fact that the units I teach exist within a course (and, in
some cases, several courses), which in turn are administered by a faculty within the university. There is a formal, inflexible, hierarchical structure, in which students learn about a particular topic. Within the unit structure is imposed by the formal controls (the rectangular box in Figure 4.1).
Structured and bounded
pushed into a box

Oozing and dancing
outside on the edge

Controlled by the rules
imposed from outside

Static and fixed
organisationally sound

Playing and laughing
as learning occurs

Silently sitting
and openly discussing

Enhancing the thoughts
with poetry and prose

Assignments achieved
and grading now done

Leaving the class
with far more than a grade

Fielden (1995)

It is when the controls are relaxed within the unit that the structure becomes freer, more dynamic and active and allows depth learning to take place. There are a multitude of activities engaged in, some of which challenge the traditional structure - like chanting, dancing and meditating - and some of which are firmly placed and respected within academia - like theory formation, literature reviews, assignment completion and note-taking. There is a symbiosis necessary between the formal and traditional methods and the less formal, seemingly-chaotic and freer methods. The formal methods provide access to the rational intellect and the other ways (the wavy
outline in figure 4.1), allow access to intuitive and creative processing which can put us onto the transitional paths between rational thought and other states of consciousness.

4.1.4 Emergence

Checkland (1984) maintains that emergence is the principle whereby whole entities exhibit properties which are meaningful only when attributed to the whole and not to its parts. He also makes the link between hierarchy and emergence by stating that emergent properties denote levels in a hierarchy. He states that every human activity system exhibits properties as a whole entity which derive from its components, activity and their structure, but which cannot be reduced to them.

*The form so required
for thoughts to emerge*

*Form from within
internally binding*

*As well as the rules
imposed from outside*

*It's part of the scene
we find ourself in*

*Finding the cracks
to dance on the edge*

*Seeing the links
between freedom and form*

*Enjoying together
insights and the mind*

*So rigidly restrained
in previous times*  

Fielden (1995)
While I agree with Checkland that emergence is apparent only when we consider the system as a whole, it seems to me that characteristics of a system emerge as the awareness and familiarity with a human activity system grows, not only with the external awareness and familiarity with others, but also by the increase in our own inner awareness. This growing awareness can change our point of view and our focus onto a different view of the system. We see the world we are considering with new eyes, and new properties emerge.

In considering this human activity system systemically, I believe emergence to be the most important of the core properties. The full list of emergent properties and the implications arising from these properties is contained in chapter 8.

The following categories of emergent properties have become apparent to me. These are:

1. Emergence arising from the whole learning community. Trust was identified as the most important emergent property by the students within the learning community. Expanded awareness was also identified as an important emergent property. Expanded awareness allows both process and content to be put into context within the traditional technical education world. Outside of this world as we explored new territory created by expanding the boundaries. Many students within the learning community identified that the learning they achieved was far beyond what they had expected to achieve during the semester, and that this happened in unexpected ways. Many students became aware of the limits to traditional technical education as knowledge of how important it is to accept different learning styles grew (within the learning community). Being able to express themselves creatively enabled students to achieve elegant design in abstract systems.
Another emergent property identified was that many students realised that they had acquired a set of life-long learning skills. As the distinction between knowledge of content and awareness of process grew, so too did the collaboration between students. By making a change of focus to include awareness of process, learning takes place in a qualitatively different way. An emergent property of learning collaboratively was that there was a growing awareness of both how other people thought and the many different points of view. Another emergent property was the ability of most students to see things as a system, no matter what it was. Many students also became aware of how profoundly and pervasively science and the scientific method has affected the ways in which they think.

2. Emergence for individual students. For many students personalising the learning process makes it real, and the shift of focus from passive attendance to active participant meant that the learning process deepened. The emergence was the consciousness awareness of how important this shift was. Many students acknowledged that they had changed during the semester, some with a much clearer focus than others. Another emergent property in learning about self for many students was the ability to acknowledge their own biases and weaknesses. By paying attention to listening skills, at least one student acknowledged how important it was to stay focussed on a discussion rather than be distracted by his own internal conversation. In active, two-way learning, students also acknowledged the importance of listening to others. For a few students there was a noticeable improvement in observational skills and for one student emerged the realisation that she had acquired a collection of universally-applicable skills. A small number of students realised that they had been through an accelerated period of personal growth during the semester, especially with the degree of vulnerability that was displayed in the class. One student realised that he was minimising risks in his life and, by doing so, limiting his learning opportunities. Another student had an up-surge in motivation after being desensitised to other people by the internal
bureaucracy in the public service. Many students realised for the first time that reflection was an important part of the learning process. A few students identified that they had acquired a new set of research skills, while others realised that they had an increased set of personal skills with which to face problems in their lives. Many students lost their fear of in-class presentations, especially those students from different cultures. These emergent properties are discussed more fully in chapter 8.

3. Emergence that occurred for myself as the researcher and facilitator within this learning community. During the course of five years of study in this research project, as I have improved my skills in teaching, researching and learning in a tertiary technical learning environment, many things have emerged for me. It is only as I write that I realise how much my skills have developed. My ability to fine-tune my skills has been evolving and that as my skills have developed, I have been able to reach more students. Emergence for me is a collection of insights about how and when depth learning takes place and how important my dedication, enthusiasm and passion is for my individual teaching style to be effective. The increase in my self-confidence and self-esteem has meant that the learning process has become more effective and that I have lost my self-consciousness about using different teaching methods. The increase in self-confidence has also meant that I could relax the controls in the classroom and, as a consequence, there has been a complete lack of discipline problems. I also realise that it has been difficult for me to make the transition from a creative mode back to an analytical mode of thinking, and that for most students the transition in the opposite direction from analytical to creative thought is the difficulty. Another emergent property for me is the realisation that retrospective interpretation of the data is important. This section is discussed more fully in chapter 8.
4.2 Conclusion

In this chapter I have taken a brief look at general systems theory and how I have used Checkland's (1984) four core properties of emergence and structure, communication and control to provide a meta-structure as a framework for this research project. I have considered implicit and explicit controls, external and internal controls, and how emergence has occurred and I have presented a brief overview of what has emerged during this project. I look at emergence in more detail in chapter 8 when I consider the outcomes of this research project.
Chapter 5: Self in the Process

In this chapter I consider the role of self in the process, from the point of view of the researcher in the research process as well as the learner in the learning process. I consider the relational self and how we establish similarities and differences to others. I consider the outer self, the individual self and the isolated self. I also talk about providing an appropriate role model for self in the process and about the spiritual self.

For me, the strongest statement is always the direct, personal one. This type of statement brings me closer to an experience and helps me feel grounded and honest.

Krieger (1991:4)

When I read "Social Science and the Self" (Krieger, 1991), I felt as if the author was talking to me personally. I felt her pain and her joy, her frustrations and her excitement. I read with my head and felt with my heart. Her work has had, and is still having, a profound effect on me. Her very personal way of writing evoked emotional reactions in me. She states that "when we discuss others we are always talking about ourselves" (1991:4). I believe that this point is vital for making learning real. As my students engage with me and with the content of a class - emotionally as well as intellectually - they take this lived experience on as their own. The content of the class becomes their own experience and not just a collection of abstract concepts.

In this section I consider a number of aspects of the self in experiential learning in a tertiary technical context - the one in which this study takes place. I will refer to the literature, to scientist (Wilden, 1970), pragmatist (Mead, 1934), feminist (Goldenberg, 1990), phenomenologist (Becker, 1992) social scientist (Krieger, 1991) and psychologist (Hillman, 1975; Maslow, 1954). I will also propose my own view of the self based on my experiences both in a learning community and in isolation. I will consider self in the process firstly as relational self - we only know ourselves in relation
to others by establishing our similarities and differences, and we only know self in this context through language. While this is the view espoused in many different discipline areas, my view is that while language forms a major component of the way in which we interact with others, there are also a myriad of other ways in which we interact that are beyond language. I will explore ideas surrounding how we know our outer self in the self we show to others as intellectual and rational in a tertiary technical learning environment. I will also describe how I provide an appropriate role model for a more holistic self in such a learning environment by making myself vulnerable and showing emotion, through movement and exercises that take us beyond the rational and that encourage depth learning.

I will also consider the individual and inner self, the self known within, that may or may not be shared with the community of others. I will explore the inner self, the isolated self and the spiritual self. I will conclude by maintaining that it is necessary to be aware of, and to share more of, the inner self in order to learn in a way that reaches the heart, the core of our emotional and spiritual self and the place where depth learning occurs.

5.1 Relational Self

Wilden (1970:xx), a scientist and a generalist, maintains that:

The quest for the 'spiritual' or 'psychological' liberation of the individual is surely a token, not of personal 'problems' on the one hand nor the 'human condition' but rather a statement about socioeconomic alienation in its modern forms.

Wilden is also dismissive of Piaget's epistemology as "atomist, intellectualist, rationalist, individualist" (1970:504). Wilden believes in the collective view, not in the individual, maintaining that individual views permit bias. My view is that in qualitative, individualistic research, bias is an inappropriate concept. In the learning community in which I conduct my inquiry, there are multiple points of view of a highly complex
situation. As the people within the system evolve in their understanding of the subject matter, and in their interactions with each other within this community, rich and diverse points of view emerge.

The interplay between Kay and students amazed me because of the obverse viewpoints chosen by some students. I am now even more aware that there are many ways to view any topic and that any future work I do in system design will involve spending a lot of time understanding the user's perspective.

Student Comment (Semester 1, 1995)

Mead (1934) emphasises that the self, which belongs to a particular organism, emerges only in a society and that our behaviour and thinking are conditioned by the behaviour of particular others and by the generalised other. Mead also maintains that self arises within a social context and within social behaviour, having not only an individual perspective, but also being able to adopt the viewpoint of another. To be self is to be in two or more perspectives at once. For instance, we are our own observer as well as the observer of others, even as we interact with them. This enables the individual to understand her/his own behaviour as a participant in the social act in relation to the behaviour of other participants.

The relational self, the self of the intellect, is the socialised self that takes on the customs of the culture within which it is embedded. For instance, students take on, in lectures, an assumed behaviour of listening passively, expecting to be told what is required to pass the course and what is necessary to complete an assignment.

Phenomenologists (Becker, 1990) believe that people are subjects, not objects, and that there is an active, experiencing person at the core of every human action. Phenomenology is the study of phenomena, of things and events in the every-day world, from the point of view of the experiencing person. It seems to me that the only
point of view I can know is my own. All we can know of someone else's point of view are our observations about what we think their point of view is. Even establishing dialogue about what the experiencing person's point of view is and gaining feedback on the other's point of view still only presents an external view of the other. Phenomenologists also believe that active subjects are intentional subjects. When we intend for something to happen we strive to make it happen. Human intentions are quests for meaning and are essential parts of life. For phenomenologists, intentionality is to construct a meaningful life and world for self and others. It seems to me that intentionality may be more or less present. When I have been in survival mode, my intentionality for putting purpose and meaning in my life sinks to a very low ebb. When I am in any sort of emotional crisis I am also in a state of low intentionality.

Goldenberg (1990), who professes to be an atheist and a feminist, and who comes from a Jewish background, also maintains that the question "Who am I" can never be asked independently of a social context. However, she does acknowledge that there is a great need to learn to think through the body: that, especially as women, we have knowledge within our body, knowledge of being an earth-bound, spiritual being, rather than a transcendental, heavenly, spiritual being. I believe that this knowledge within the body can be accessed in a myriad of ways, including dance and movement, visualisation and chant, meditation and Tai Chi. By introducing elements of earth-bound knowing into my computing courses, the learning deepens.

Krieger (1991) maintains that in sociology the self is often construed as a hollow core, best understood as a reflection of external forces that act upon it. It seems to me that because the social sciences are viewed as generalised sciences, there is a natural tendency to de-emphasize the particular and internal nature of the self and to see the self in intellectual terms. This results in descriptions of the self that have little to do with every-day experiences of individuality.
5.2 Establishing Similarities and Differences

One person's idiosyncratic experience speaks to the experiences of another. People find likeness despite difference, and they all find it more when more is said about the self.

Krieger (1991:47)

As social beings we see the world through our own filters. We take from each experience what is relevant in the moment, discarding most of what comes our way with each interaction. This is an automatic reaction to protect ourselves from information overload. This is certainly true in an academic setting. If I give only standard, straight lectures, where notes are taken down by passive, disengaged students, then most of the learning experience is lost.

One of the major realisations from students in my courses is that lectures are a place to learn - not just a place to acquire a set of notes - a place where learning is varied and where a multitude of participative techniques is used to facilitate learning.

My concept of a lecture has changed. I always felt like a “stuffed chicken” in the head before. The lectures in GST required me to think.

Student Comment (Semester 1, 1995)

I establish a scenario where the differences are real and are in conscious awareness, thus providing a multitude of paths to cater for different learning styles.

My gut feeling is that I have finally played an active role in a unit, and learned, not just from studying texts, but from listening to other students’ points of view.

Student Comment (Semester 1, 1995)

Inevitably, there is always at least one intelligent sceptic in a class who refuses to take part in participative exercises, who regards my idiosyncrasies with disdain and who is looking for a fat folder of notes. And, just as inevitably, when such a student has reached the end of the semester, she/he realises that perhaps there was some benefit in
viewing the world of learning differently and maybe she/he would have learnt more from a more flexible attitude throughout the semester.

I found that to be part of this system [learning General Systems Theory] required more effort than I first imagined. I went from confusion and frustration at the beginning of the semester to a level of satisfaction at the end.

Student Comment (Semester 1, 1995)

This highlights the fact that not only do we interact with others by looking for differences and similarities, but also that each one of us is a continuously changing dynamic entity. As we learn, we change and as we interact with others we also change. As we reflect on each and every situation we are an evolving being, and in turn our relational selves grow and learn.

5.3 The Outer Self

We know who we are by the way in which we interact with others. This is the only way in which we know ourselves according to most of the authors referred to above. The relational self that we know in this way is the outer, intellectual self, the goal-oriented, self-interested self in furthering functional knowledge in a tertiary technical world. This is the self interested in gaining a qualification, the self-interested person following the logical, sequential steps along the way. This is the self that looks at, and acknowledges the similarities and differences with others, seeking out interactions with others that will further its own goal-directed behaviour, such as completing a tertiary qualification. This is the narrow, directed and highly-focussed world of an outer, rational self intent on success.

While the outer self is defined in relation to others in an intellectual and rational domain, it is also the self which, when narrowly-focussed on success, has little time for socialising, making friends, philosophising, exploring own ideas, reflecting or learning.
experientially. This is the self, which is brought, through the community we establish participatively, into conscious awareness as an impoverished self.

My second level of participation was below the surface, in an unconscious form. I believe that as the course progressed and as my understanding of the subject matter improved, and as I thought about my early impressions, attitudes and beliefs, there was an unconscious change in my point of view of systems thinking. Although this occurred in my own personal space within the system it is a form of active participation and one that surprised me a little.

Student Comment (Semester 1, 1995)

The connection I achieved with the group members (for the second assignment) greatly enhanced the experience. It made the experience.

Student Comment (Semester 1, 1995)

This is the self that is highly-focussed, goal-directed, selfish, highly-competitive and success-oriented. This is the self that is isolated from others within. This is the self that has little awareness of a spiritual self, being integrated into a technical, academic world, and this is the self that is stretched beyond such constraints in a participative learning community.

Working in a group was truly a time of personal growth.

Student Comment (Semester 1, 1995)

5.4 Individual Self

When we explore the dynamic created by the tension between this rational outer world, the world of the relational self in a tertiary technical learning environment, and the rich inner world released by going beyond the boundaries of the rational outer world, we gain access to a self that is emotional, reflective, spiritual, private, vulnerable, fearful and that is, ultimately, isolated and alone.
As I, in all my fear, passion, enthusiasm and vulnerability, expose more of my inner self to my students they, in turn, show more of themselves through the stories and experiences they share with the rest of the class. The inner self is the self known only to ourselves - the self that may or may not be in communion with a higher self, if that happens to fit with our belief system. By sharing, by role-modelling, by exercises that take us into other ways of knowing - chanting, dancing, visualisation etc. - we reach the core of our emotional and spiritual self, by-passing the rational mind. We do this insightfully, creatively, powerfully and emotively. In this way trust is established, so that this opening-up happens more and more easily. A learning community evolves where participation becomes richer and more dynamic, involving more of our individual and inner selves. Such interactions, established this way within the learning community, are the lessons in life, the depth learning that happens in such a setting.

*It's like the dance*

*We can dance, alone.*

such a powerful dance
is an expression of self,
a way of exploring
this person within.

*We can dance, together.*

this dance, a more powerful dance,
the weaving of souls,
is the expression of self
combined with that of another.

* Dancing as one.*

Mcrac (1995)

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*I can't dance with you*

if it is your soul
you won't share.

*I can't dance with you*

if it's my soul
of which you are

Kay Fielden 11/19/95
These two poems were written by a masters student who, during one semester, internalised the heart-felt learning and presented it back to me as his "rich picture" - in poetry. These poems bring me close to tears as I realise that in such a short space of time this young man, a science graduate, can reach such a depth of knowing and can produce such a beautiful way of expressing the importance of self and community.

5.5 The Isolated Self

Feedback from students suggests that most learning in a tertiary technical world takes place in isolation.

Because other computer units are so 'cold and sanitary' they were a chore that you knew you had to do and you just wished that the semester would end.

Student Comment (Semester 1, 1995)

The students feel little or no contact with the lecturer or, indeed, with other students in the class. They take notes in lectures, do not engage with the material, go to sleep, chatter, let their minds wander, become bored, lose the thread and get notes from others, later. In other words, they may be present, physically, but they are not present in any other way. The isolation experienced in this context - the traditional tertiary, technical lecture - is isolation from others. Students tell me that they have been to lectures (particularly part-time students) for years without interacting with anyone else in a meaningful way.

In this unit I have formed the first two friendships which I feel will survive post-Uni. I believe that it is because of the nature of the unit and the research method in particular which
required that we give of our inner selves rather than our academic opinions. That opening of
myself to others has formed a lasting bond. This was an unexpected outcome.

Student Comment (Semester 1, 1995)

I have taught in the same faculty for seventeen years. I don't know many of my
colleagues well. They keep their inner selves hidden well, not only from each other, but also from their students.

There is also the isolation within - the isolated self from which most of us run, the
fearful self within that no-one else knows, the inner self - sometimes hidden from our
own knowledge of who we are by the busyness of every-day life, by the number of
assignments due, and by the sheer quantity of material thrust at us each day - which is
fodder for the intellect. This is the inner self that rises to consciousness through any
number of meditative or reflective practices. It is the feelings, the inner knowing, the
place where poetry touches the heart, the still centre and the direct knowing of a
spiritual self (and it depends on personal beliefs how this is expressed). This is the self
that is only known to us and is not known to any other. This is not a relational self.
The inner self enriches our interactions with others and can only be known to self.
Johari's Window (Luft,1970) (Figure 5.1) shows a simplistic view of outer and inner
self. There is the relational self that may or may not be known to self, shown on the
left of figure 5.1, and the inner self that, in turn, may be known or not known to self
shown on the right of figure 5.1. It is only when the boundaries to the parts of
ourselves become known, whether they be inner or outer, that we make shifts in our
understanding and awareness of who we are in the world. When I explore learning
beyond rational boundaries with my computing students they discover more about
themselves and there is an increase in awareness of who they are in relation to others,
then their boundaries shift.
Eight years ago, I attended a Taoist "Enlightenment Intensive" workshop. The aim of this three-day workshop was to bring participants to a state of "direct knowing" of their spiritual selves. The spiritual path was one of denial - a lack of sleep, a reaching beyond normal physiological boundaries, avoidance of stimulants of any kind, no physical contact with other participants and no conversation with others apart from the controlled exercises. As the three-day workshop progressed, I became more and more ill-at-ease with the techniques that were being employed. I felt controlled and manipulated, isolated and alone. Towards the end of the third day, my resistances did give way. I had an extreme physical reaction to a shift in my personal barriers - and I gained knowledge of a part of myself that I had not known before. The boundaries surrounding the "unknown to self", the "unknown to others" quadrant in Johari's window, had moved. This was, and still is, my most powerful experience of shifting personal boundaries from unknown to known, from inner to outer. Almost as an aside, I did indeed gain the "direct knowing" of my spiritual self that was the aim of the workshop.
There is also the isolation caused by being hurt and injured within. The victim of society, broken relationship, lack of parents, inflicted cruelty, powerlessness and helplessness is one whose self turns inwards and the interactions with others becomes too much of a struggle. In the academic world in which I work, a basic assumption is that such an isolated self does not exist. Those that present themselves for a tertiary education in technology can't possibly be in that state. They have taken the step of enrolling in such a course. However, circumstances change - ill health, whether it be physical, emotional or mental, stress, family responsibilities, work and sport, can cause isolation in such a tertiary world which, in turn, can mean that the student then goes within and isolates her or himself even further. The ability to stand up for herself or himself disappears, especially if a student is emotionally distressed. My observations are that the problems associated with studying in a functional world that does not acknowledge emotional distress, are turned inwards thus exacerbating the situation. My experience and observations in this technical environment are that emotional distress in such a functional world is often viewed as a sign of weakness.

5.6 Providing An Appropriate Role Model

By providing a role model where I talk about my own fears, my own sense of isolation and of being victimised, legitimates such emotional states, encourages interaction and enables the isolated self to heal and become part of the community again. By allowing this within the classroom and by allowing emotions as a valid conceptual concept, students are encouraged to step out of their own individual isolation, thus providing an appropriate environment in which depth learning can occur. While a student remains in an isolated state it is very difficult for such learning to happen. He or she is shut down psychologically and functioning reverts to basic needs rather than to higher evolutionary requirements.
Your displays of openness, vulnerability and sensitivity created an ambience that was embraced by the students. I never, at any stage felt threatened and antagonised, or distanced from the learning process, and because you were prepared to display vulnerability, we felt encouraged and at ease to express our feelings, seek clarification and provide feedback to you, something which has been sadly lacking in most units of study.

Student Comment (Semester 1, 1995)

By building the allowance of emotions into the formal course structure I bridge the gap between content and process.

5.7 The Spiritual Self

And when I step into
my relational self

Then I feel
soul connection with you

When I engage
in this moment of time

Then I experience
the dynamics of now

Fielden (1993)

The spiritual self, the self of the soul, is not acknowledged in a technical world, on the whole. Hillman (1975) suggests that "soul" refers to the deepening of events into experiences and that "soul" encompasses the imaginative possibilities of our nature, and the experiencing through reflective speculation, dream, imagery and fantasy. I have found that by using the "techniques of the soul" - the poetry, myth and story, the dancing and the meditation - computing students can, indeed, access their souls.
I spoke to my inner guide for the first time. I consider this to be an emergent property of my interaction in this unit because it is something I have been trying unsuccessfully to do for a long time. I think I achieved it this semester because my mind was more open to new experiences than it has ever been before.

Student Comment (Semester 1, 1995)

For me, creative writing, especially mythical tales and poetry, can create a barrier behind which the inner self can hide. I can use creative writing to evoke the emotions and the soul contact with another, without exposing myself. The directness in the interaction is then gone. It is like soul-connection from afar, felt, experienced and a safe place in which to hide. When I place myself back into the lived-experience as I write about it, then the barriers dissolve as I feel the emotions, as well as recall the memories.

5.8 The Necessity For The Individual Self In Researching Depth Learning

I retained the information better because I could relate it back to a story or a poem that the lecturer had written or to a game that we had played.

Student Comment (Semester 1, 1995)

By bringing the need for self-observation and self-reflection as a learning tool into conscious awareness, and by demonstrating through stories and actions how vital this is for me, the students gain insight into how to use such tools for themselves in their learning and as on-going life-skills.

My domain of reality changed as my emotions changed throughout the learning process. This emotion change was brought about by a great deal of self-reflection achieved through observation of my own feelings, thoughts and reactions to the interactive process.

Student Comment (Semester 1, 1995)
5.9 Conclusion

In this chapter I have considered the role of self in the process as a researcher and as a learner, both from my point of view and those of the students. I also consider the role of self in the process from a number of different perspectives including self in relation to others, self in isolation, the inner and outer self, the individual self, the spiritual self and the necessity for the individual self in depth learning.
Chapter 6: Research Methodology for Inquiring into Depth Learning

The activity of research is clearly a social process and not merely a rationally contrived act.

Pettigrew (1985:53)

In this chapter I consider the research methodology required for this project. I consider qualitative research methods in general, and participative inquiry in particular, to situate my research within the broad cross-section of qualitative research methods. I consider the importance of reflection and particularly self-reflection. I look at unobtrusive research from the point of view of social research in particular, at how I make my research transparent and at how the research enhances the learning process. I also consider interpretation as a research tool and explain how I use interpretation within this research project. I look at creative writing - both stories and poetry - as a means of exploring depth learning. I describe how I collect data and how I record my observations and reflections to inform the research process.

In exploring the proposition that depth learning in a tertiary technical world happens in the dynamic that exists between the logical/rational intellectual paradigm and the experiential extensions of the boundaries surrounding this domain, it has been necessary for me, coming from a scientific and technical academic background, to discover the world of qualitative research. I will consider where my research methodology fits within a plethora of qualitative research methods, firstly looking at a cross-section of methods and, secondly and more specifically, at methodologies in participative inquiry. My research requires subtle and evolving strategies that are non-intrusive and participatory, which build and maintain trust with participants, and which involve the group being studied changing with each semester. While a group of students plays a similar role in the research each semester, students move on as they progress through their course of study. Also, because I have taken myself outside of the logical/rational domain in considering the dynamic between the rational intellect and the many other ways of knowing available to us, it is very difficult to quantify and
often difficult to grasp what, indeed, I am doing and, therefore, I have decided to consider and use qualitative methods.

There is extensive and recent literature in qualitative research methods (Wolcott, 1994; Reason, 1994; Guba & Lincoln, 1994; Denzin & Lincoln, 1994; Meniff, 1993; Alticht, Posch & Sormeh, 1993; Elliott, 1991; Heron, 1989; Oja & Smulian, 1989; etc). I will draw on this literature in exploring where my research is positioned within the many ways in which qualitative research can be carried out.

I will look at the multi-dimensional nature of my research, being based largely on the principles of humanistic psychology (Heron, 1989; Maslow, 1968; Rogers, 1961), and I will consider the influence of Peter Reason (1991) who attended the very first residential in the PhD program at the University of Western Sydney, Hawkesbury. I remember a barmy Tuesday in January, when we had a delightful day exploring intuitive and creative approaches to research, using a nonsense-language exercise devised by Peter, followed by a poetry-reading session, some creative writing and an evening of sacred dance, lead by me. Hawkesbury, a beautiful campus with buildings over one hundred years old, set in the country town of Richmond on the western outskirts of Sydney, has a special, sacred and spiritual meaning for me. It is the place where, in the course of my exploration of the field of social ecology, I have learnt how important it is to know and to use the many other dimensions of ourselves. It has provided me with the impetus to keep going in a very difficult, hard-to-explain, and to me; absolutely imperative research program addressing how to expand human potential both for my students and for myself.

Interdisciplinary wanderings
beyond the boundaries of all

Looking between
these various worlds
Denzin and Lincoln (1994:583), in summing up their excellent handbook on qualitative research methods, explore "The Sacred, The Humanistic and the Technological". Never before, apart from my own explorations, have I seen these words in juxtaposition. Denzin and Lincoln talk in the abstract about the importance of merging people, technology and spirituality and mention the importance of Peter Reason's work. It fills me with delight to see mention of sacred dance and ritual alongside considerations of the technical. I experience these connections as I practise, in my teaching and in my research, a humanistic and spiritual approach to learning in and about technology. I have created a world, a technical world, in which people in all their many dimensions are honoured and where trust flourishes. Denzin and Lincoln (1994) have honoured the work that I do and I am moved deeply by this.

Krieger (1991:31) mentions the importance for us to find our own individual way of carrying out subjective research, particularly in exploring how we, as researchers, fit into and influence the whole process of research. I have looked retrospectively at where my research fits into the field of qualitative research. This has been a deliberate act on my part. While I knew how I wanted to maintain congruence at all times with
the person I am and with my beliefs about how learning takes place in a tertiary technical learning environment, intuitively I knew that I would need to do this without reference to the literature to develop a fresh and innovative research method - one that is highly dependent on me as facilitator to work successfully. I believe there are transferable qualities and skills, and that these are always modified and tempered by the researcher. This is at the very core of subjective and experiential research. My story is not anybody else’s story. My research is an art form and all art is highly individualistic and creative.

Wolcott (1994:1) states that:

Research is a means of organising our thoughts to reach understanding not an end in itself.

and he also suggests that:

The real mystique of qualitative inquiry lies in the process of using data rather than in the process of gathering data.

Denzin & Lincoln (1994:1) maintain that qualitative research is a complex, interconnected family of terms, concepts and assumptions. They suggest (1994:2) that:

Qualitative research is a multimethod in focus, involving an interpretative, naturalistic approach to its subject matter.

Denzin & Lincoln (1994) also believe that qualitative research involves the studied use and collection of a variety of empirical materials - case studies, personal experience, introspective life story, interview, observational, historical, interactional and visual texts - that describe routine and problematic moments and meanings in individuals lives. They say that, accordingly, qualitative researchers deploy a wide range of interconnected methods, hoping always to set a better fix on the subject matter at hand.
6.1 Characteristics of Qualitative Research Design

Janesick (1994:212) suggests that qualitative research has many design characteristics, a list that she maintains is not exhaustive:

1. Qualitative design is holistic. It looks at the larger picture, the whole picture, and begins with a search for understanding of the whole. I believe that my research is holistic. In dealing with the complexity of a multiplicity of other ways of knowing, as well as with the logical/rational intellect, the only way to gain further understanding is by considering the system as a whole. This understanding comes from the insights gained as new knowledge emerges.

2. Qualitative design looks at relationships within a system or culture. My research considers the relationships within a tertiary technical learning environment, particularly the development of a trusting, supportive learning community in which participants are prepared to risk exploring the transition paths where depth learning takes place.

3. Qualitative design refers to the personal, face-to-face and immediate. It has always been imperative for me to stay in-the-moment, to be as present as possible at the time, to experience the present in its fullest form, and to speak my experience as it is happening. As a qualitative researcher and teacher, making myself vulnerable to such a degree provides a role-model for my students to trust both themselves and me in exploring the dynamic as a means of extending their own human potential.

4. Qualitative design is focussed on understanding a given social setting, not necessarily on making predictions about that setting.

And when I step into
My social setting is a tertiary technical learning environment, in which my aim is to help students to understand their own learning processes and to learn the content of the particular course. I make no claims about how this might be transferable to any other social setting, nor do I make any claims about where I might go to next.

5. Qualitative design demands that the researcher stays in the setting over time. While I have stayed within my world of tertiary technical learning, the student group changes each semester. I gain experience, skills, understanding and knowledge from each successive semester. The qualitative research, therefore, is an evolving process.

6. Qualitative design demands time in analysis equal to time in the field. I wouldn't express this sentiment in quite this way. I believe that some proportion of time (and it varies, depending on the demands on time I experience as an academic, a mother and a researcher) is spent on reading, reflecting on the literature and on classroom experience, analysing data, preparing for insightful process to appear and on writing. The interpretation and the analysis occurs as a result of all these things, and probably some I have
missed. I believe that the important consideration for me is that the focus of my life changes. When I'm researching lived-experience it doesn't matter what I am doing: the research process is always foremost in my mind.

7. Qualitative design demands that the researcher develops a model of what occurred in the social setting. This is an interesting statement. It seems to me that Janesick (1994) is giving validity to the fact that models may be developed after the event. For me, model-development has been an evolving process, moving from a general aim of extending human potential in a tertiary technical learning environment, to the realisation that it is in the dynamic that exists between the logical/rational intellect and other ways of knowing that depth learning takes place. This has made it necessary for me to re-visit data previously collected, to re-analyse and re-interpret.

8. Qualitative design requires the researcher to become a research instrument. This means that the researcher must have the ability to observe behaviour and to sharpen the skills necessary for observation and face-to-face interviews. It seems to me that this statement is unnecessarily restrictive. Certainly, it is a major commitment for me to improve not only my observational skills, but also, and more importantly, my reflective skills. There are many more ways to collect qualitative data than face-to-face interviews. I believe that skills in listening, asking questions, brain-storming, facilitating learning processes, interpreting creative writing and setting the scene to unlock intuitive ways of knowing, are more important than skills required with face-to-face interviews.

9. Qualitative design incorporates informed consent decisions and is responsive to ethical concerns. I believe that in any form of participatory inquiry, it is far more than informed consent that is required. Trust within the community being researched is encouraged and stabilised by participative decision-making.
Then, everyone in the community owns the decisions. I know that in the learning community I establish there are some constraints that are non-negotiable. Everything that can be decided by the community within these boundaries is.

10. Qualitative design incorporates room for the description of the role of the researcher as well as description of the researcher's own biases and ideological preference. These principles are vital for me. As I expose who I am within the learning community, so others are encouraged to deepen their own learning process by personalising it.

11. Qualitative design requires on-going analysis of the data. I have discovered that, as my understanding of the social setting in which I work develops, so it has become necessary for me to re-examine data collected in previous semesters. In re-visiting the data I have been able to see emerging patterns in the increased awareness of the students as they become more at ease in the dynamic that exists between the logical/rational domain and other ways of knowing.

6.2 Research Methods in Participative Inquiry

Because qualitative research encompasses such a wide range of discipline areas and methodologies, it is important for me to position my work within the general area of participative inquiry in education and in tertiary technical education in particular. Reason (1994) examines three approaches to participative inquiry: co-operative inquiry, participative action research and action inquiry. He maintains (1994:325) that co-operative inquiry has its roots in humanistic psychology, in the idea that people can, with help, choose how they live their lives free from the distress of early conditioning and restrictive social custom (Heron, 1988; Rowan, 1976; Maslow, 1968; Rogers, 1961) and that working together in a group with norms of open authentic
communication will facilitate this (Randall & Southgate, 1980). While orthodox social science inquiry methods, as part of the rationale, exclude the human subjects from all the thinking and decision-making that generates, designs, manages and draws conclusions from the research, co-operative experiential inquiry (Heron, 1989; Reason, 1988; Reason & Rowan, 1981) treats people as self-determining, or as authors of their own actions. Reason (1994:326) maintains that research on people can only be done if they are self-determining, and that the research, to some significant degree, must be determined by them. So, in co-operative inquiry, all those involved in the research are co-researchers.

Table 6.1 (Torbet, 1991)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Development</th>
<th>Governing Frame</th>
<th>Focus of Awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Impulsive</td>
<td>Impulse rules reflexes</td>
<td>Self</td>
</tr>
<tr>
<td>2</td>
<td>Opportunist</td>
<td>Needs, interests rule impulses</td>
<td>Outside world, effects</td>
</tr>
<tr>
<td>3</td>
<td>Diplomat</td>
<td>Expectations rule interests</td>
<td>Socially-expected behaviour</td>
</tr>
<tr>
<td>4</td>
<td>Technician</td>
<td>Internal craft logic rules expectations</td>
<td>Internal logic, thought</td>
</tr>
<tr>
<td>5</td>
<td>Achiever</td>
<td>System success in environment rules craft logics</td>
<td>Interplay of plan, practice and effect</td>
</tr>
<tr>
<td>6</td>
<td>Strategist</td>
<td>Principle rules system</td>
<td>Synthetic theory of system environment development over time</td>
</tr>
<tr>
<td>7</td>
<td>Magician</td>
<td>Process (interplay of principle/action) awareness rules principle</td>
<td>Interplay of awareness, thought, action, and outside world in eternal now</td>
</tr>
<tr>
<td>8</td>
<td>Ironist</td>
<td>Intersystem development awareness rules process</td>
<td>Interplay of self and other systems in the wider world</td>
</tr>
</tbody>
</table>
Reason (1994:328) posits that the primary task of participative action research is "enlightenment and awakening of the common peoples". The first point, Reason (1994) maintains, is concerned with issues of power and powerlessness and the second point is the lived-experience of people and that in participative action research the knowledge and experience often in oppressed groups, is directly honoured and valued. Participatory action research aims to produce both knowledge and action directly useful to a group of people, through research, education and socio-political action, and to empower people to a deeper level through the process of constructing and using their own knowledge. Reason (1994:331) maintains that the third important point for participatory action research is authentic commitment, where the rights, beliefs and values of the people in collaboration are honoured.

Action inquiry, says Reason (1994:331), is "consciousness in the midst of action". Torbet (1976:167) points out that a person must undergo what appears to be an unimaginable scale of self-development before becoming capable of individual valid action. In Table 6.1, Torbet (1991) lists eight successive stages of development. From this list it can be seen that it is only in the later stages of development that a person is aware that there are alternative frames and that perceptions, including own perceptions, are always framed in assumptions, which can be tested and transformed (Torbet, 1986:86).

Reason (1994:332) suggests that collaborative inquiry involves the individual practitioner in reflecting continually on her/his own behaviour-in-action, while simultaneously behaving in a fashion that invites other members of the community to do the same. Collaborative inquiry involves explicit shared reflection about the collective dream and mission, open rather than masked interpersonal relation, systematic evaluation and feed-back of collective and individual performance, and the direct facing of any creative resolution of the paradoxes that otherwise polarise conflicts (Torbet, 1987:128). Reason (1994) further maintains that the purpose of
action inquiry is to "engage in one's own action and with others in a self-reflective way, so that all become more aware of their behaviour and its underlying theories."

Reason (1994:335) suggests, in his "mutual critique of the three approaches", that when co-operative inquiry is considered from the perspective of participative action research it appears to over-emphasise the psychological at the expense of the political, and the microprocesses of small group behaviour at the expense of wider political processes, and it appears to define reality. From the perspective of action inquiry, co-operative inquiry appears to lack a robust theory of action and the exercise of power. Reason also maintains that from the perspective of co-operative inquiry, the writing of participative action research appears to romanticise the goodness and democratic tendencies of the common people, and to ignore the ways in which groups may be both destructive and distant from their experience. From the perspective of action inquiry, participative action research, in emphasising the importance of sharing power, fails to consider the ways in which leadership can be developed. And action inquiry from the perspectives of both co-operative inquiry and participative action research appears to be advocating an updated version of a Western and masculine "rugged individualism", to be elitist in its emphasis on the later stage of ego development, and to ignore the contribution of common people in both the small group and the wider collective (Reason, 1994:335). In his summing up of these three approaches to participative inquiry, Reason says that he would like to see the approaches integrated.

6.3 Where my Research Fits

In considering Reason's (1994) comparison of collaborative inquiry, participative action research and action inquiry, it seems to me that my research does not fit into any of these approaches. As the director of the learning process, I have more power than the students. I make the final decision on grades in the unit. I have a particular topic area to teach in a unit, decided in collaboration with other members of academic staff, that fits within the course curriculum. There is a power imbalance between students
and staff, that is fixed within the academic system. Therefore, there cannot be complete mutual decision-making and the power imbalance must stay. In co-operative inquiry, Reason (1994:326) states: "ideally there is full reciprocity, so that each person’s agency is fundamentally honoured in both the exchange of ideas and action". Not only is there a difference in power in directing the progression of ideas and concepts presented during the course of one semester, but also the students' expectation is that this process will be directed by me. Some students become confused and apprehensive when constraints are relaxed. This is described in chapter 6.

Nor does my work fit completely within the ideals espoused by Reason (1994:328) about participative action research. The concept of "common people" and "other cultures" is not applicable to my research. Both the students and I have well-developed attitudes and expectations about academic life. It is for the privileged and it is a seat of higher learning. There are issues of power, already described. My research is about lived-experience within the learning community established during a semester, and it is also about empowering everyone in the learning community as they deepen their own individual learning. My commitment as a researcher and as an educator is evident, and it is a motivating force for students. It is an appropriate role-model for depth learning to take place.

I identify strongly with the statements of Torbet (1976) when he suggests that a high degree of self-development is required for a individual to become capable of relationally-valid action, and that my degree of self-development means that I can direct and facilitate learning, as an evolving and on-going process, as openly and authentically as possible in my present state of self-development.
Inside Out

Looking again
    and feeling the pain
Losing the body
    and contact divine
Being objective
    and distancing self
Writing it now
    as if from afar
Looking again
    and feeling the pain
Now staying and sitting
    and doggedly trying
Seeing the pain
    and what it involves
Pushing and pulling
    and turning around
Reflecting the feelings
    now into words
Looking again
    and feeling the pain

Fielden (1993)

So, my research does not fit within any of these nominated methods, yet it contains most of the elements identified in all of them. I believe that my research method contains the following elements: working with small groups, an interest in depth learning, deepening the understanding of how learning takes place, exploring power imbalance in the classroom, providing an appropriate role-model, continuing on a personal path of self-development, demonstrating the importance of reflection in participatory inquiry, showing the importance of trust, honouring our own unique process, emphasising the importance of staying in the moment and considering the moral and ethical issues in participative inquiry.
I work with small (20-200) groups for a limited period of a semester. While student groups change in composition from one semester to the next, their role is maintained. In this respect my research, with its emphasis on depth learning, fits within co-operative inquiry, rather than within participatory action research or action inquiry. My research is about understanding, in more depth, how learning occurs in a tertiary technical learning environment. This depth of understanding is common to all three approaches - participatory action research, action inquiry and co-operative inquiry - analysed. There is a power imbalance, dictated by academic structure. This power imbalance, and the recognition of the importance of this in participative inquiry, fits within action inquiry rather than within co-operative inquiry or participative action research. I provide an appropriate role-model in facilitating depth learning. This is specific to this project. Another academic or researcher would obtain different results. This is more in line with co-operative inquiry than with participatory action research or action inquiry. My commitment to self-development as a necessary prerequisite both to understanding how learning occurs and to the progress of this research, fits within the action-inquiry paradigm rather than within co-operative inquiry or participative action research.

My research process is reflective, particularly self-reflective. By bringing reflective processes into conscious awareness, the discovery of self-reflection in students is encouraged. This fits within action inquiry and co-operative inquiry more than in participatory action research, however, reflection is an important element of any form of participatory inquiry.

A Perilous Journey

A perilous journey
this journey within
Cognitive temple
restricting walls
Finding the theory then
fitting the thoughts
(Serious business
get a paper out of this)
Mind tied in knots
ideas moving fast

Just rest a while
let go and relax
Move into space
where time never ends

Internal chatting
gradually ceasing

Now coming back
mind clear and refreshed
Insights abound
to order the chaos

Fielden (1993)

An hour's contemplation is better than a year's worship.

Shah (1969:122)

Kemmis (1985:143) suggests that:

Sometimes we say that reflection is mind's conversation with itself. If not explicitly in language, at least we must admit that this conversation prefigures language.

Kemmis (1985:149) has devised the following list on the nature of reflection:

1. Reflection is not biologically or psychologically determined, neither is it "pure thought"; it expresses an orientation to action and concerns the relationship
between thought and action in the real, historical situations in which we find ourselves. And, indeed, this may be the case, but I wonder if reflection always leads to action. My suspicion is that it does not. My experience is that my fears can stop me from taking action, even after considerable reflection.

2. Reflection is not the individualistic working of the mind as either mechanism or speculation; it presumes and pre-figures social relationships. Here, I disagree with Kemmis. My experience leads me to believe that some of the reflective process is socially related, but we do have an individualistic self, capable of reflecting without social interaction.

3. Reflection is not value-free or value-neutral; it expresses and serves particular human, social, cultural and political interests. I agree with Kemmis here. For we are socially-embedded in our culture. This must be the case.

4. Reflection is not indifferent or passive about the social order, neither does it merely extend agreed social values. It reproduces or transforms actively the ideological practices that are at the basis of social order. My experience tells me that this can only happen if our reflection leads to action.

5. Reflection is not a mechanical process, neither is it a purely creative exercise in the construction of new ideas. It is a practice that expresses our power to reconstitute social life by the way in which we participate in communication, social-action and decision-making. This statement, once again, seems to me to be based on the premise that reflection necessarily leads to action.

Maturana & Varela (1992:24) state that:
Reflection is the process of knowing how we know. It is an act of turning back upon ourselves. It is the only chance we have to discover our blindness and to recognise that the certainties and knowledge of others are, respectively, as overwhelming and tenuous as our own. Actually, not knowing what makes up our world of experience, which is the closest world to us, is a crying shame.

In setting up a learning community for the sharing of ideas, reflections, observations and analysis, the necessary element of trust emerges. Trust is identified as an important element in any participatory inquiry method.

In my research it is important to acknowledge the uniqueness of individual process.

The reality of human life is that no one can truthfully and reliably speak for all of us; the desire to do so is arrogance itself.

 Cole (1992:15)

No-one views the world in quite the same way as someone else. Generally, we form close connections with others who have similar or compatible views.

Experiential researchers need to have a high order of tolerance for ambiguity and confusion. New ideas may be found by allowing, celebrating and encouraging, going through the stages of confusion which the inquiry generates. "You can't plan chaos, but you can plan to be creatively divergent, and if that results in chaos, recognise and accept it without anxiously trying to clean it up.

Reason (1988:14)

I believe that, as researchers into human nature, human interactions and the human condition, it is our responsibility to be aware of our own projections into the research process. This process of inquiry may stir up fear and defensiveness in us. Usually, we find that defensiveness is directed towards those aspects of ourselves that we have
repressed and denied. Once stirred up, these aspects reinforce each other and may distort the whole process of research. Our usual pattern of behaviour may be projecting onto the world the anxiety of our denied distress. If, as researchers, we remain unaware of this kind of defensiveness, then we may use conceptual models that reduce personhood to external behaviour observed by others. It is vital to take time out to monitor the distorting effects of fear and hidden distress.

Seeing the paths
so richly entwined

But wait, is there more
is it paths that we have

Does this restrict
what happens for us

Should we now think
of how we proceed

The walking, the knowing
not the path and the fact

Is this when we shift
when we honour this time

This time that is now
just gone in a flash

Kept for all time
when we step into now

Fielden (1993)

My experience in the classroom supports my belief that our lived-experience is enhanced by being present as fully as we can.
I believe that, as soon as we take full responsibility for our actions, which we must do when our mind-set shifts from objective to subjective, we are faced with moral and ethical dilemmas that are not even considered in the traditional academic approach to learning. It is much easier to hide behind autocracy and excessive control than it is to allow student autonomy and flexibility. There is so much to learn here, and I think that we are only scratching the surface.

Shifting the focus to being involved subjectively means that we can no longer carry out experiments on or for people. It means that we can no longer assume that we know what is best for our students. We may have a wealth of experience, and we may be subject-matter experts, but now we need to negotiate learning plans with our students, instead of imposing assignments on them. We should ask ourselves if it is ethical to impose closed-book tests on our students, or to set assignments above the ability of the class. We should pay much closer attention to the process of learning and less to the outcome. We should ask ourselves if assigning grades in a co-operative learning environment is appropriate (an autocratic act, after a semester of co-operation and participation) and we should ask ourselves if it is appropriate to withhold information from our students and to test them in a final exam. There are many more such questions. If we are to maintain a sense of integrity as we change and take on different ways of teaching to encourage a multiplicity of thinking and learning styles, then there is a real need to address these issues.

As our role as educators changes from autocratic subject-matter expert to co-operative facilitator there are also other questions that we need to address. Is the way in which we interact with our students consistent with our educational aims? Have we maintained a sense of integrity in what we are doing? There seems to be an inverse relationship between amount of control and difficulty in maintaining integrity. The tighter the control, the easier it is to maintain this sense of consistency - because there are far fewer issues to consider about people in systems.
As we interact more freely and with more flexibility it becomes more and more important to monitor the process of learning. While this may be a dynamic process requiring continual self-monitoring, I believe that it is necessary to find where we fit on the continuum between autocracy and autonomy. Finding this place on the continuum, which is only fixed in the time we happen to be in, takes effort, emotional involvement and time. If we do not develop personal skills at the same time, we can become even more stressed. This suggests to me a great need for training, not only in how to teach, but also in how to develop inner skills which, with subjective involvement, become professional skills as well. We work towards holistic involvement. My deliberations about what evaluation questions to ask in General Systems Theory in semester 1, 1995 (ch6, p118) illustrate some of the difficulties in making the transition from autocratic interaction and objective research to participatory learning. I maintain my sense of integrity as an educator by setting clear guidelines, by using my inner skills for my own clear-headedness and by being flexible.

6.4 Unobtrusive Research

Kellehear (1993:65) states:

To search for the personal, individual account helps to:

- rehumanise a portrayal by going beyond images of mass, periodicity and institutional changes and statistics;

- explore issues which are not pre-conceived or if pre-conceived may stretch beyond the expected. This may offer or stimulate further theoretical and conceptual processes;

- complement and balance portrayals of the many with the few, the personal with the impersonal, the social abstract reality with the personal lived one;

- clarify and consolidate the understanding of human experience through the technical use of empathy and reader identification;

- enliven and enrich social science discourse making such discourse engaging and compelling whether for research or for the purposes of teaching.
Kellehear (1993:5) states that unobtrusive research methods include written and audiovisual records, material culture (physical objects, settings and traces), simple observations, and hardware techniques (camera, video, etc). Kellehear also says that unobtrusive methods do not include interviews, questionnaires, manipulative experiments and tests. He believes that unobtrusive methods have the advantage of being able to assess actual behaviour as opposed to self-reported behaviour. Unobtrusive methods are safe, repeatable, they are non-disruptive and non-reactive and they are easy to access, inexpensive and a good source of longitudinal data. He maintains that the disadvantages of unobtrusive methods are: distortion of original record, decontextualising, intervening variables, selective recording, over-reliance on a single method and limited range of application.

The main problem for me in Kellehear’s (1993) description is that there appears to be a lack of informed consent in obtaining the data. He cites infeasibility in obtaining permission to observe large groups. He also believes that if people know they are being observed it would change the data gathered. He also believes that it is doubtful that privacy is being invaded in a public place:

...I felt you observation, and maybe others did too. I realise that you are a teacher second, and a student first, so I respect your need to observe. I always knew it was there.

Student Comment (Semester 1, 1995)

After the semester was over, I discussed this comment with the student. He said that my keen observation of what was going on made him uneasy, initially, even though I had kept the class informed all the time about the research. My observation of him is that he was equally as observant and as reflective as I was.

For me, unobtrusive research does not mean observing without consent - and observation is the only technique that I use that fits into Kellehear’s list - or invading participants’ privacy. My unobtrusive research methods are far more subtle than this.
In conducting participative inquiry into depth learning in the classroom, and by bringing the learning process into conscious awareness, it becomes part of the reason why we are in the classroom anyway; that is, to learn a particular topic. In making the learning process explicit, the learning deepens, and the research into this lived-experience is unobtrusive in that it is part of the course, not an added activity imposed on the class. I do not have many of the problems of most social researchers in familiarising myself with the research environment, in gaining access to participants. It is my world of work, and the students’ world of study. By being open about my roles as researcher and educator, students are never unaware of the process. Secrecy, and all the attendant ethical issues, is not a problem. I believe that openness and shared decision-making in participative inquiry goes far beyond informed consent.

Towards the end of semester 1, 1995, five years into this research, thinking that I knew, by then, what participative inquiry was, I was deliberating about what questions to ask the students to gain feedback on what they thought they had learnt. When I was discussing this with one of masters students, his comment was:

Just ask the class. They will tell you.

This was such an obvious thing to do. He had been making decisions collaboratively all semester. I had fallen back into my autocratic ways, and I didn’t think that asking the class was a valid and consistent step. I felt humbled and excited at the same time. I was excited because this student had applied what we had been learning about participative decision-making to evaluation and I was humbled because I had stepped back into autocratic mode.

6.5 Interpretation

Interpretation is a demanding discipline, encompassing essentially everything we are and everything that is. Its practice has the potential to open us up to what we are and what our world is. What is missing is a set of guidelines that tell us how to deal with the problems that inevitably arise, and other practices that are less involved with conceptual content and have the possibility of sharpening our general mindfulness and awareness.
Goguen (1991), in a short paper entitled "Hermeneutics and Path", draws on his Buddhist belief system to bring meaning to a philosophy of computer science. He is only too aware of the predominant mind-set in technical circles. Goguen suggests that in order to be a good interpreter it helps to be a "good person". In Buddhism, it is believed that by following the life principles of generosity, discipline, patience, energy, immersion and discriminating awareness, one becomes such a person, and, therefore, a person who is fit to "interpret" the world around her or him. Even though I don't subscribe to Buddhism, I do agree with Goguen that, indeed, we do need to be "good people" in order to interpret the world, both the outer world and our own inner world. As is usual in most spiritual practices, I meditate regularly, clearing and disciplining my mind each day. For me, interpretation would not be possible without my inner self-disciplined practices. Without the meditative practices that clear the mind, we retreat into our ordinary confused mind (Goguen, 1991:40), the forgetful and chaotic mind being taken over by fears and anxieties. The non-confused mind does not develop without such meditative practices; clarity does not come to us from some separate pure realm of its own. It is only when we have an intimate awareness of how mind works, especially in relation to emotional and conceptual "baggage", that we can have a clear and insightful interpretation of what is happening. I am more likely to see what is happening when my mind is clear than what I wish would happen.

Greene (1994:536) suggests that interpretivism is concerns contextualised meaning. She states that inquiry which relies on interpretation is unabashedly and unapologetically subjectivist. She goes on to say:

Moreover, what is important to know, what constitutes an appropriate and legitimate focus for social inquiry is the phenomenological meaningfulness of lived experience - people's interpretation and sense making of their experiences in a given context.

Therefore, the goal of interpretive inquiry is not a matter of manipulation and control, particularly via method; rather, it is a question of openess and dialogue. I believe that
this openness and shared communication is crucial for depth learning to occur. Student comments suggest that, this has, indeed, taken place for them.

The environment of trust and sensitivity meant I was not scared to offer an opinion, present a view or ask a question.

Student Comment (Semester 1, 1995)

Guba & Lincoln (1989:134) suggest that, methodologically, interpretivism is most consistent with natural settings, with the inquirer as the primary gatherer and interpreter of meaning, with qualitative methods, with emergent and expansionist inquiry designs, and with hermeneutic understanding. In contrast, interventionist prediction focuses on the overall goal of inquiry.

Patton (1990:461) states:

Rather than believing that one must choose to align with one paradigm or another I advocate a paradigm of choices. A paradigm of choices rejects methodological orthodoxy in favour of methodological appropriateness as the primary criterion for judging methodological quality. The issue then becomes . . . whether one has made sensible methods decisions given the purpose of the inquiry, the question being investigated and the resources available.

In investigating my world of work, this is the natural setting (Guba & Lincoln,1989) for me, as the researcher, and for my students. They are there to gain a tertiary education. Indeed, I have allowed the ways in which I gather information to evolve, from one minute to the next, from one class to the next and from one semester to the next. And, as Patton (1990) suggests, I have not aligned myself with any one particular methodology. While I am in the general field of participative inquiry, I have followed my guiding principles of openness, shared decision-making, relaxing control, setting up a trusting and supportive environment, providing an appropriate role-model, passion and enthusiasm and dedication, to dictate, often intuitively, what the next step will be. If the prepared plan does not fit with the energy in the classroom, or with the content the students feel they need, and if the official data-gathering mechanism for
evaluation appears intrusive, then I will follow the mutual decisions within the learning community. I will still obtain data - and, mostly, these are much richer data - from stories and free-form appraisals rather than from official surveys, data that can be re-visited as I gain more and more clarity about the process, data that can be interpreted and reinterpreted because they have not been guided into a "tick-the-box" answer form.

Goguen (1991:41) makes the following distinction between mindfulness and awareness, two qualities that he believes are essential to be able to interpret the world around us:

Mindfulness is attention to what is actually there, "one-pointed", direct and precise. Awareness is the context, the space, within which mindfulness happens. . . so awareness is the willingness not to cling to the discoveries of mindfulness, and mindfulness is just precision, things are what they are.

Goguen also suggests that meditation is the interpretation of mind. He draws the conclusion that the path of hermeneutics is the path of meditation. While I would not make this claim, there is certainly a connection between the two, especially if we believe that a clear mind is required for interpretation.

6.6 Insightful Interpretation

My experience suggests that insightful interpretation arising from complete immersion in the research process, followed by the self-discipline of meditative practice, a well-deserved rest, a walk, a session of Tai Chi or dance, is the most valuable for me. The quiet time, however I take it, is the appropriate environment for insights to emerge as I travel back into my normal state of consciousness. This is where my depth learning, as I place meaning on the participative inquiry, has taken place. Is interpretation a wholly-rational process? For me, I don't believe this is the case. I can see the whole picture as I travel back; the plan is laid before me. In the rational state I then fine-tune this plan and, in this way, I maintain the balance and the tension between rationality
and other ways of knowing, whether they be emotional, intuitive, kinaesthetic, symbolic or metaphoric.

Wolcott (1994:23) suggests that interpretation can be free-wheeling, casual, unbounded, aesthetically-satisfying, inductive, subjective, holistic, generative, systemic and impassioned, and that the results of interpretation can be creative, speculative, conjectural, fresh, surprising, unpredictable, imaginative and insightful.

For me, interpretation, rather than careful analysis, permits the best fit and has the most congruence with my research approach. Interpretation is consistent with my belief that it is by knowing myself that I can carry out participative inquiry with any validity. Wolcott also suggests that interpretation is more subtle than analysis. He is not interested in

Where or how we derive our interpretive insights . . . the ultimate judgment must be based on their worth, not their source.

(Wolcott, 1994:37)

For me, it is equally important to honour the source, the process and the final outcome. Without knowing how insights may occur, they may never arise, thus stemming valid, insightful interpretations.

Interpretation and re-interpretation, for me, occur as a result of an on-going, reflective process. By keeping the research process in focus - in the fore-front of my mind - reflection becomes a mindful activity, always present, sometimes more than others. Because my meditative practices are part of my life, my mind has been trained in the ways of mindfulness and awareness. The focus that these practices provide, permits observation and reflection to be present, most of the time. Interpretation can happen at any time, in any place. It is not something that I set aside to contemplate for a specific time. I rely on my insights to inform me.
6.7 Creative Writing as a Means of Exploring Depth Learning

One morning I sat quietly for thirty minutes, meditating, mind at rest, body still, letting go of the anxiety surrounding the deadline that I must meet to finish this thesis, and, as the agitation subsided, and as the energy within became a continuous flow, the ideas emerged, and the words started to flow. Now I could write, and now the ideas could connect. Now there was peace within. I had allowed the pathway between sleeping and waking, between soul-contact and intellect, between body and mind, and between insight and rationality, to open. Without this opening, preceded by a shift into a meditative state of consciousness, it would not be possible for me to write. Sitting quietly is something I do regularly. My rational mind often demands that I move into the pile of work to be done. My intuitive mind tells me to be still. It is when I listen to my intuitive mind that I am at my most productive. It is when I take the time to sit quietly that the writing flows. It is just one of many ways of making the transition into other paths between the intellect and other ways of knowing. That day it was as a result of sitting quietly that the words flowed and the ideas order themselves.

Creative writing is one way in which we can tell the stories of our lives, often in a way that removes us from our most vulnerable state. Bateson (1979:13) describes story as:

... a little knot or complex of that species of connectedness which we call relevance.

while Houston (1986) says that human connections are deeply nurtured in the field of shared story.

People think that stories are shaped by people. In fact, it’s the other way around. Stories exist independently of their players. If you know that, the knowledge is power. Stories, great flapping ribbons of shaped space-time, have been blowing and uncoiling around the universe since the beginning of time. And they have evolved. The weakest have died and the strongest have survived and they have grown fay on the retelling... stories, twisting and blowing through the darkness.
And their very existence overlays a faint but insistent pattern on the chaos of history. Stories etch grooves deep enough for people to follow in the same way that water follows certain pathways down a mountainside. And every time fresh actors tread the path of the story, the groove runs deeper.

This is called the theory of narrative causality and it means that a story, once started, takes a shape. It picks up the vibrations of all the other workings of that story that have ever been. This is why history keeps on repeating all the time.

So a thousand heroes have stolen fire from the gods. A thousand wolves have eaten grandmother, a thousand princesses have been kissed. A million unknowing actors have moved, unknowing, through the pathways of story.

It is now impossible for the third and youngest son of any king, if he should embark on a quest which has so far claimed his elder brothers, not to succeed.

Stories don't care who takes part in them. All that matters is that the story gets told, that the story repeats . . .

Pratchett & Prachett (1991:8-9)

The evolution of explanations and information can be seen in Figure 6.1 (Reason, 1991).

Figure 6.1
In our rational, logical world we move along the continuum from records to general theory. According to Reason's view of explanations and information, the only way to gather text-based data outside of this rational, logical domain is to move into metaphors, stories, sagas, myths and archetypes.

Houston (1986) suggests that there are four levels of story: sensory, psychological, mythic and integral. She also maintains that it is clearly inappropriate to think of stories as intellectual things. No matter how stories are articulated, they are about ourselves and our world. Any understanding we have of reality is in terms of our stories and of our story-telling possibilities. You cannot easily expect to question or change aspects of the stories by which we live. We are often frightened to tell our own stories, to speak with our own voices. We are trained out of such telling (Mair, 1988).

In the co-operative learning community set up during the semester, the stories flow freely; the stories written down in poetry and prose, told in the classroom and in the refectory, shared in the corridors and dreamed in the shower. The stories flow because individual transition paths have been opened, because the trust is there and because the fear of being judged has been released.

When we control others we limit their stories. Learning becomes more effective when interactive story-telling occurs. Connecting patterns with a story-line takes us beyond just learning skills and techniques, no matter what we are learning. As we seek connecting threads in our history, we create connections that we now put into words. It is these stories that are formed by the conceptions of experience in which present and past events are held together by common meaning (Howard, 1988). The limiting of our stories by ourselves or by others inevitably has tragic consequences.
As we tell stories, and as we share our experiences, it is not only the story-line that we share but also our emotions. We feel the experience together. And, as Maturana (1993) believes, when we experience common emotions we are able to shift reality to a multiple-reality domain. Story-writing, and especially story-telling, gives us access to common emotions and hence to a common reality. As we shared our experience of the poster episode we also shared the emotions. We shared the outrage of being treated autocratically and the bonding in the class was deepened by the incident.

As I become more aware of who I am, my story becomes enriched and, as I amplify my patterns of connection with others by extending the capacity of my body, mind and spirit, I evolve. As I provide the opportunity for my students to share their stories, their potential is extended as well.

Houston (1986:95) says that:

... story-telling is the oldest form of teaching, and the basic vehicle for the transmission of culture from one generation to another. Story is living and dynamic. Stories exist to be enlarged. They are the currency of human growth. Stories need to be told and retold, heard and reheard to reveal their meaning. Story-telling builds a bridge between the teller and the listener that transcends all factual accuracy.

Luke (1982) says that a real story touches not only the mind, but also the imagination and the unconscious depths in a person, and it may remain with her or him through many years, coming to the surface of consciousness now and then to yield insights.

Apparently (Capra & Steindl-Rast, 1991; Houston, 1986), story-telling was the preferred mode of Gregory Bateson, who was one of the key figures in the development of systems thinking. When presenting material to others, Bateson was essentially a story-teller. His way of showing the connectedness of various patterns was through a story.
As we experience, tell and retell our own stories, and as we listen and listen again, to the stories of others, then we move into common emotionality. We feel the shared stories.

Once I told stories as a person tries on suit after suit of clothes to find the most flattering fit. Now I am in my walking shoes, gladly moved, step by step, by the stories we tell and have always told.

Keen & Valley-Fox (1989:9)

6.8 Poetry

My poetry comes from the depths of my soul. It releases me from the inhibitions of grammatical structure. My poetry takes many forms. It can be an emotional reaction, a comment on process, a reflection on structure, an observation on the behaviour of others or a dream-like fantasy. My poetry appears insightfully, is gratefully accepted, never struggled with or teased out. My poetry is a sign to me that the pathway to depth learning is open and that the energy is moving freely. When I read poetry in class, when I express the feelings, the thoughts and my deepest emotions, then I touch this core in others who, in turn, open up to the flow in them. When I receive poetry from those in class, this move me to tears as they, in turn, demonstrate that, for them, the transition has occurred.

Listen.
Listen with those mental ears of yours,
that allow you to understand what you read.

Not if you agree with it,
only if you understand it.

McRae (1995)
Chapter 6: Research Methodology for Inquiring into Depth Learning

It’s sort of like,
being quite enough,
aware enough,
to hear your heart beat.

It’s sort of like,
knowing, that beat is yours,
the feeling that flows from that beat.
is yours.

It’s sort of like
knowing your own heart beat,
before you hear the beat of another;
before you feel the beat of another.

McRae (1995)

The dark night sky,
and a darker sea.
The sight of a shooting star,
the roar of the pounding surf.
This is my mind’s eye,
A dark stillness
of powerful activity.

McRae (1995)

For me, creative writing always comes from the heart. It is the feelings evoked that are important. They may be reflective, insightful, interpretive or mythic. There are examples of each style throughout this thesis.

6.9 Collecting the Data

Coming from a scientific and technical background, I understand the term “Collecting the Data” as a set of quantifiable facts with which to evaluate my research. This pre-conceived notion dissipated rapidly as I realised that any thought of how I might
measure the thesis proposition (that depth learning might happen in the dynamic established as we traverse transition paths from one state of consciousness to another) leads to intrusion, an infringement on personal space and detracts from the main purpose of each group of students with whom I work. Their main purpose is to learn and to pass the unit as part of a tertiary award.

As a social ecologist engaged in qualitative research in general, and participative inquiry in particular, I know that data can take many forms. My qualitative data are descriptive and interpretive. As my research methodology has evolved during the course of this project, so, too, has the data collection. 1992 was the first year in which I also used free-format student appraisals (in General Systems Theory) that took the form of stories, narratives and poems. While the data in this form are much harder to interpret, there is a richness and complexity that was absent in the standard evaluation forms. In 1992, in Computer Practice, the project unit, individual student appraisals were part of the course requirements. The students were directed, when writing their appraisals to consider what they had learnt, what they had got out of the unit, how their group worked, whether the facilities were satisfactory, if the unit was organised satisfactorily and to add any other comments. Data collected from these student appraisals supported the notion of extending human potential, but still shed little light on how depth learning occurred.

1993 was a year for reflection, recovery and writing. No data were gathered in this year as I was not teaching. In 1994, the student appraisals for Computer Practice supported, again, the notion that, human potential had been extended, but not how it had been extended. The stories and evaluations from General Systems Theory were starting to shed some light on transition paths between states of consciousness. It was not until semester 1,1995, that I realised that I could access data about the dynamic in which I believe depth learning takes place. We did, indeed, shift states of consciousness in class, and the students wrote their account of what happened for them.
as they returned to their every-day state of consciousness from a creative visualisation exercise. Also, in semester 1, 1995, I set a take-home examination that satisfied the course conditions for formal evaluation as well as providing me with data about whether depth learning had taken place and how this had occurred.

So, the way in which I collected the data from the students evolved as the research methodology evolved. I trusted my intuition to inform me about the most effective way to collect data. At all times, I was guided by a set of common principles: that the data collected should be of value to the students as part of their course, as well as being data for my research; that the students were fully informed of my research at all times; and that at no time should data be collected for my research if they were of no value to the learning outcomes of the course. Because I allowed myself the flexibility to collect data from the students in a variety of ways, I believe that I have captured more of the complexity and richness of learning in a co-operative, participative community that I would have been able to do if I had adhered to just one method of data collection.

6.9.1 Observations and Reflections

At all times during the research project I kept a journal of the process. This included observations of what occurred in class, stories about what had occurred, poetry that appeared for me as I dwelt on incidents that had happened and ideas for exercises. As I re-read journal entries, I annotated and dated the observations if I saw common patterns emerging, things I had missed because I was too close to the data, and insights that arose. I recorded observations of emotional states in the class, my feelings, facts, descriptions and interpretations of what had happened. In the journal I captured as many of the ways in which I interacted, observed and reflected on the class as I could. My aim in keeping a journal was to capture ideas and incidents as they occurred in the richest manner possible. For me, the details of every-day life - whether it be work, study or play - get lost, if I don't keep a journal. Now, I realise as I write and reflect
on the process of journal writing, that my ability to observe, remember and reflect is affected by my state of being at the time. If I am alert, awake, enthused and motivated, my observational powers are acute. At the end of a day of teaching - or if I am recovering from illness or if I am in emotional upset - my mind turns inwards and I observe much less of what is going on around me. I also realise how essential it was for me to perform my daily meditative practices helping to hone my observational and reflective mind. I also realise that only some of the incidents in class were recorded. Some were forgotten, discarded or dismissed as unimportant for the research project. Some were etched so powerfully on my mind that I have never forgotten them. I have drawn on journal entries as well as on these powerful images in my mind.

In this section I have discussed the many ways in which I collect the data I have used in my research. While there was some formal data collection - directed student evaluations from Computer Practice students (and I have included interpretations from these in the description of the research) - I have drawn more heavily on data from creative writing and free-form responses. During the period of my research, I collected stories from most classes. Sometimes, as in General Systems Theory, I prepared the class by starting with a creative visualisation exercise (Appendix 1) and, sometimes, I asked the students to write about their experience in the unit, without any such preparation. I gathered stories from a wide cross-section of students and classes. My students have provided me with my most comprehensive collection of data from external sources. In chapter 7 I will consider these stories with respect to each particular situation. Insights happen spontaneously - or they can be directed to happen. If I have a block to doing anything, I ask myself a question about the block, sleep on it, write it in my journal and forget about it for a while. Sometimes the answer comes in a dream, sometimes as a flash of understanding as I wake in the morning and sometimes there seems no explanation at all for why I should have such an insight at all.
6.10 Conclusion

In this chapter I have described the qualitative research methods that I have used in carrying out this research project. I have looked at how I enhance the learning process with my research practices. I have described how I collect data and what interpretation means to me as a qualitative research tool. I have described the use of creative writing as a tool, as well as how I record observations and reflections.
Chapter 7: In the Classroom

In this chapter I will describe classroom activities and the student feed-back that I received. The classroom experiences have lead me to the conclusion that depth learning in a tertiary learning environment can only ever happen as a result of the dynamic that exists between the dominant, logical/rational, intellectual paradigm and the experiential extension of the boundaries surrounding this domain. Any experiences which suppress the full, holistic expression of our being, whether the experience be intellectual, emotional, spiritual, kinaesthetic, or any combination of these, alienate us from the fullness of the expression and hence from depth learning.

I will describe the historical sequence of events during the course of this project as I interweave narrative, creative writing, student feed-back and my interpretation to illustrate the evolving methodology and the claims that I make.

This account illustrates the cultural problems - cultural in the sense of employing "alternative" teaching methods in a rational/logical domain, as well as referring to the country-of-origin - that have emerged. Students in the faculty of Information Sciences and Engineering come from many different countries including China, Vietnam, Korea, Laos, Tibet, Bhutan, Malaysia, Indonesia, South Africa, Thailand, Taiwan, India, Pakistan, Bangladesh, and Taiwan. For most of these students, English is not their first language.

I will look at the complexity, rather than focus on a dualism, of exploring a tertiary technical learning environment in that a multitude of ways which allows us to traverse many transition paths between both the logical/rational domain and other ways of knowing, and the different states of consciousness. I will describe how I bring the theoretical curriculum alive by playing, dancing and chanting, and with story and poetry. I will look at how the experience of time alters when we shift from one state
of consciousness to another. I will consider the balance required in going beyond the rational in order to deepen the learning in the rational/logical domain. I will describe the ways in which I balance content with process, and functionality with reflection. Above all, I will look at how I gather data so that the whole of the research process is a non-intrusive process, conducted and interwoven into the flow of the learning about the content of the course.

Because much of the research in this project involves qualitative data, and because both the students and I are changing dynamically as we learn about content and process, I will consider the role of self in the process. I will also conclude this chapter by considering a systems framework to give a broad view of the classroom experiences.

7.1 The Story Through Time - General Systems Theory

7.1.1 The First Iteration

In semester 1, 1992, I collected a set of stories - mythical, factual and narrative - after a creative visualisation exercise. I have used this same exercise in following semesters. In that same semester, while I realised that interesting things happened in and after such exercises, I did not have a clear idea about how this would impact on depth learning. As I reflect on these stories three years later, I see that depth learning did occur. The students were able to apply the knowledge learnt in the collection of stories included. I had been talking about how we can tap into the creative and intuitive part of ourselves in a previous class. I asked the students if they wanted to experience a different state of consciousness, one that would put them more in touch with that creative and intuitive part. I made it quite clear that they did not have to attend the class if they did not want to have this experience. So, the time came for the class, and I did an exercise with them called a Skill Rehearsal. This comes from the work of Houston (1986) in extending human potential (Appendix 1). It is also a
technique that is used by sports psychologists world-wide. I asked the students to select a skill that they wanted to improve and then, with the help of some mood-setting music, I led them into the exercise, which takes about 20 minutes. I played some gentle music that enhances visualisations (usually from one of the following albums: Deuter: Henon or Lynch: Sky of Mind or Kitaro: Tenku). This music is devoid of strong melodic content, and Watson and Drury (1987) maintain that such music leads us into a state of mind expansion while still remaining gentle and reflective in quality. Watson and Drury also state that such music enhances our inner journey of the spirit. I read aloud the exercise (Appendix 1) with a slow, gentle, rhythmic voice, in keeping with the mood of the exercise and with the ambience created by the music. When I brought them back from their journey into themselves, I gave them a sheet of paper and asked them to write a story - a story about General Systems Theory. Before I present these stories I want to describe a wonderful story from one of the students who decided to practise improving his soccer skills during the skill-rehearsal exercise. He was so taken with the exercise that he borrowed a tape of the exercise from me and went home and did the exercise again at home, the night before a big match. When he got on the field, he was still so entranced with what was going on inside himself, in visualising how he would play the game, that he kept missing the ball! Perhaps I forgot to tell him how to come out of the trance state properly. Now for some stories.

The Lonely Princess

Once upon a time there was a lonely Princess, trapped high in the Royal Palace because she wanted to do things her way. The Princess cried and cried each day in her room, but the King would not relent. "Things shall be done my way," he said.

After several years of this impasse there arrived on the scene a hardy bunch of youthful dragon-slayers. They knew everything, and no one could teach them anything new.

One day, as they sat in the town square (empty because it was rutabaga season) the Princess called down to them. And a conversation of sorts struck up, with gaps in the
young men's hearing, although the Princess had no problems listening from high up in her tower.

And the youths returned each day to talk to the Princess, and they gradually realised that not only was there her way and their way but other ways too. And each day it grew easier to understand the Princess, and the tower window sunk a little closer to the ground each day.

Finally, one day, the Princess and the youths were level. They said: "Step forth, damsel" And she said. "No for I shall fall." And the youths looked around and discovered it was not the tower that had lowered, but it was themselves floating above the ground.

THE END.

This story was written by a very intelligent computing student who disdained class attendance, preferring to do things his own way. He had little regard for traditional classes. The story contains elements of magical happening, of being aware of multiple points of view and of the problems associated with innovation in rigid structures. This story illustrates that happenings beyond the rational have been accepted by this student. The most remarkable thing is that the students who wrote this and other stories had done no such writing since they were in primary school - perhaps ten years ago. To me, this indicates that the process that I had initiated - to take them beyond the rational - was working. The inner gate to their creativity became unlocked, and in becoming so the transition path into an altered state of consciousness and hence, depth learning.

The Event

Harold the Barbarian left the icy wastes of his homeland in search of the unknown. Harold had lived his whole life in the village of Haragoth. Unbeknownst (dodgy spelling) to Harold or the rest of his tribe, Harold was blessed with an open mind.
free will and a desire for learning new things. In his tiny village Harold had never had the chance to realise his potential or even recognise the presence of his gifts. And so Harold left his family, his home, his generations of age old traditions behind and set out to discover new and unknown things.

Harold crossed many lands, through seasons harsh and gruelling. Every encounter with the people of the lands Harold traversed, left him more knowledge than he had before. And yet he still yearned for more.

Of course his travels were filled with conquest and heroic battles, but Harold found himself increasingly preferring reading and conversation to the battle lust and physical combat which used to dominate his very existence.

Harold was changing. He didn’t realize the change, but those he came in contact with, couldn’t understand how a barbarian could be this way. And still Harold travelled, until one day he came to a small village, not unlike his own. Harold had come far since he began his journey. No longer did Harold struggle through the cold, wintry wastelands of his home, but rather he explored the green forests and rolling hills in the warm air and sunshine.

The small village was well established. Harold wandered the single street and observed the people and their dwellings, until he came to the small house that doubled as the village inn. Harold knocked (a habit he picked up somewhere) and entered after a voice greeted him and bade him enter. The front room was reasonable in size, with a few tables and a large grubby man (spot the innkeeper stereotype) sitting at a table, carving a small wooden bowl. Harold and the innkeeper ate together and talked of many things. The meal was fine and the companionship friendly. After the cleaning had been done and rest was not far off, the innkeeper told Harold of a wise sage who lived in the neighbouring county. Kayena was full of knowledge and lived alone with only her books for comfort. Harold, as the innkeeper noted, looked like he might benefit from a visit with her. Harold slept on it.

Early the next day, Harold left ample payment for the innkeeper and set off to meet his destiny.

Harold travelled for many days and nights, until he found the tiny cottage which marked the collective wisdom of the surrounding lands. He knocked and waited. No response. He knocked again and again and finally entered. The brightly lit room was
Chapter 7: In the Classroom

filled with books and tomes of every size and age. A musty aroma filled the air as Harold surveyed the tiny library. Feeling very intrusive, Harold moved slowly through the room. He was awe struck by the sheer amount of knowledge the sage had at her beck and call. From the look of the dwelling, there seemed to be only one other room, the doorway of which was covered by an old blanket. As Harold moved the blanket aside his eyes tried to adjust to the darkened room beyond.

His eyes made out a bed, and on it a still and silent figure. Harold knew. He knew that the sage had passed on and as he decided that he must pay his respects and bury the sage, he spied an open scroll beside the bed. He read of how the sage had known of his coming and had left now, because her knowledge would survive.

Harold buried the woman who foretold him as her successor. He took residence in the shack but soon built it into a large and comfortable home. Eventually Harold began to teach all he had learned and was still learning. Students sought him as a teacher of not only knowledge but ways of learning and knowing.

The Library of Harold became the centre of learning for all who sought enlightenment. Here, they learnt the first of Harold's teachings: "Search from within."

*The Chronicles of Harold, Barbarian, Sage.*

As I re-read "The Event", it brings a lump to my throat. This student was so engaged in writing this story that he had not finished it by the end of the class, and so he asked me if he could hand it to me later in the day. He came to me late in the afternoon, some hours later, with the story, saying that he had felt compelled to finish it - he could not give it to me incomplete. He had become immersed in the task. This was not an assessable item, but a class exercise. This student had become fascinated with ways of knowing and learning and had given a seminar presentation on learning systems - as his preferred topic - when theoretical and conceptual aspects of systems were discussed. This story, "The Event", contains the wonderful mythical elements so characteristic of
Chapter 7: In the Classroom

stories coming out of trance and dream states, and the insights gained in such states. When these insights happen, depth learning is more likely to occur.

Once upon a time (pretty corny, but I had to start somewhere) there was this most portentious dude. He was doing the evil degree of computing. (he had been cursed by the great witch.) During the course of his degree he had to face many deadly challenges. Nearing the end of his course he accepted the GST challenge, believing that if he could defeat the great Dragon Kay he would be one step closer to ridding himself of his curse and gaining the treasure at the end.

Arming himself with his great array of wit and humour, he stood resolute to the challenge. Upon entering the first class of GST he was faced by the Great Dragon, who was babbling all sorts of incantations, none of which any of the dudes in the room could comprehend. Believing this to be a play which the Dragon would use to lure in her unsuspecting prey before destroying them with bits of string and silly instructions, the portentious dude remained resolute and refused what the Dragon had to offer.

After many aeons, and much babbling from the Dragon, the portentious dude decided to try and understand the Dragon. He spent many moons learning her language. After a while he began to change. Though he would not notice for several aeons.

One day he discovered that Kay was not a dragon, but a wise Mage who too had been cursed. The curse had been cast upon her by the Conclave of Wizards, called the computing department. The curse had been an illusion cast upon her which portrayed her as evil, a dragon and an outcast.

As time went on, the portentious dude began to see the light. He began to realise that there were many things he did not know. With the help of Kay the Mage, the portentious dude set upon a new journey of learning which would one day rid him of his curse, and with time maybe make him a better person. The story does not end here, it is a never ending saga. It is a tale of life. Maybe one day the portentious dude would be able to pass on the WORD and help all the unsuspecting dudes...
This story was written by the resident artist, whose characteristic drawings were always dragons. In the examination paper for the unit, he drew an "exam interlude" - yet another dragon - and he received full marks for the examination. This student "drew the lesson" as I talked about cybernetics. And, again, we have insights - which were released during the creative visualisation exercise - into the learning process and the slowly-developing awareness of learning and thinking differently. He also realised that these were skills he could take with him for the rest of his life.

GST
"General Systems Theory? You get a lot out of it, if you put a lot in."

The wise man's words echoed in my head as I stood at the edge of a ravine. My question of what is GST about was answered in one sentence. I was kind of expecting a lot more from Guru Dale Kleeman. To ask the Guru's advice I had to trek for two days in a steamy jungle, fight two head hunting lecturers and a particularly hungry tutor. And all for what? A short sentence stating the obvious. "Thanks Guru Dale," I said in a disheartened voice and headed back to the city of GST.

The city of GST was a strange city, it was definitely not like other cities at all. Some of the inhabitants of the city liked its mysticism, others were bored and spent most of their time away from the city. I thought it was different too. Sometimes I like the change that the city brought about, other times I did not agree with the mayor of the city. Sometimes the mayor spoke true words, but they did not affect my life and its destiny.

Some people say it is a learning city, rather than a working city. You learnt through the way the city made you think not through repetitive tasks. I thought the city of GST was a good place for a holiday, but I wouldn't want to live there.
This story suggests to me that there is still some resistance to learning differently. The fact that this student was aware, and wrote about his own awareness of changing and what was happening to him, is highlighted here. In 1992, while I was still feeling my way as I developed my knowledge of creative visualisation and its importance to depth learning, more and more students became aware of the importance of going beyond the rational to deepen the learning process.

Once upon a time, in a land about 10km from home, there was a “student”. The student was in this land, for two good reasons - to learn, and to enable the student to get a job.

The land where the student “studied” was, in the early years, a jungle - full of hidden dangers, distractions and traps. Now, in the third year of “study”, the land was still a jungle, but had been painstaking charted, and had almost become a refreshing environment.

The trouble was, unknown to the student in the early years the land had been charted and mapped - by the thousands of previous student-travellers and others. But, everyone sees the lane in a different way.

It took 2 1/2 years for the “student” to discover that the land has many beautiful flowers, plants, animals and scenery.

In this story, I see a student's narrow focus on education as a way to get a job, and his task was to find a way through an amazing jungle. The story shows a growing awareness of many points of view and an awareness of changes in his own point of view. It also suggests to me that there was some resistance in leaving the
logical/rational domain. Not every student is ready, or willing, to make such explorations.

Once upon a time there was a young girl called Isis. Now Isis only wanted 3 things out of life. These were: to be loved, to be respected and to one day grow into a healthy, happy adult. Unfortunately for Isis, however, there were some adults who said that because Isis wouldn't eat her greens, there was no way she was ever going to grow. Some parents were so unhappy about Isis' behaviour they wouldn't let their children play with her.

But Isis kept playing with her friends, having fun, acting just as she had before. Occasionally she would throw a temper tantrum and everybody would point and stare at her... But Isis' mummy and daddy said it was all just "part of growing up."

One day, maybe today, Isis was still sitting on her front porch eating an ice-cream. A young boy who had seen her playing the day before walked up to her and asked her a question.

"Why are you different from all the other children?"

"I don't know" she replied.

The boy sat down beside Isis and smiled to her.

"I thought so." he said.

This is a story which transports us to another time and place as it alludes to classical mythology, childhood and the child-like wisdom of intuitive knowing. This suggests to me that this student had gained awareness of his own intuitive processes. It seems to me that creative visualisations can by-pass the rational mind, allowing intuitive process to emerge.
In the first lecture, we drew a motif to represent what we thought the unit was about. I drew a piece of jigsaw puzzle. Because I didn’t really know what to expect, but I thought the pieces would fit together and form a whole eventually. When I think about it now, it was pretty close to the way things went, but in a different direction to the way I thought it would go.

The first impulse in GST is to try and build up the jigsaw in a systematic way, because that’s the way every other unit has “worked”, i.e., find all the edge pieces and corner pieces first, sort out all the pieces of the same colour together and try and put the whole picture together as quickly as possible (because there were other jigsaws, or units, which needed to be finished at the same time)! However, it quickly became apparent that this wasn’t going to work.

Just as I began to think I had come to grips with one concept, the picture changed, and I had to undo part of the jigsaw and put it back together another way. I still haven’t finished the jigsaw; there are parts of the picture filled in but it looks more like a picture of bits and pieces than a picture of edges filled in.

One thing is for sure; I have definitely changed the way I think about things and the way that I plan how to do things. I think a lot more about the process, and about the alternatives. Whether this change has lasting effects beyond this semester I don’t know, but I hope that it will.

GST provided for me a little “bubble” - a space away from the constraints of time, work, “normal” pressures of academic “learning” and my own hard-and-fast ways of doing things, to reflect on what I do and how I do it.
And it was fun!

This student, along with more than fifty percent of the students in the class, was ISTJ (Introvert, Sensate, Thinking and Judgemental) on the Myers Briggs Type Indicator. When we discussed different world views in General Systems Theory, the students filled out a Myers Briggs Type Indicator evaluation sheet as the class exercise. This
psychological indicator personalises the concept of world view, thus making the learning about world views fit into the students' every-day world. I am informed by a practising psychologist, who administers the MBTI test to people in workshops, that Canberrans are predominantly of this type. This story, which is more an observation closer to the rational plane using the analogy of a jigsaw, shows that the changes have happened here, too. While this student did not access the magical intuitive space, the insights into the way she had changed are still here. It also seems to me that the transition paths can be traversed without complete awareness and that the changes will still occur.

I appreciated the fact that the lectures were not a rehash of the textbook. This gave me the opportunity to independently read and evaluate the textbook. I found the lectures unencumbered by any oppressive weight of academia. In most units the lectures are just this, which I find a difficult milieu to concentrate and learn in. To me the lectures were "free-ranging". Thus I was usually challenged to relate their content to GST, which I usually could.

The style of teaching which I found to be an adventure of heurism and didactism - was refreshing for an academic institution as it goaded me to think about the subject content and its meaning.

I thought the mood of the lectures was relaxed and friendly, which in its own way produced quite a good sense of belongingness to the process represented by the lectures. I think its what one would hope for under a systems approach to lectures.

This evaluation of the General Systems Theory classes makes a number of points. It shows that this student could investigate other material independently (one of my aims in this unit was to act as a pointer into relevant literature). This student accepted the challenge to move his understanding onto a deeper conceptual level, rather than absorb facts only. There is also a comment on the bonding within the class and a wistful note that it would be nice if this happened more frequently.
This is a unit which covers very many topics but the way it was dealt with didn't make it difficult to learn. I actually enjoyed the way it was taught because to me it seemed that a boring topic like systems was presented in a way which was very interesting. It was a very active way of learning because I felt that everybody was involved. In other lectures the lecturer gives notes and lets the students come to their own conclusions.

This unit has made me to understand myself better - ie what kind of person I am and what type of people I would be comfortable with.

As we said that different people have different learning methods - well, I enjoyed this unit vastly. I also used to get teased by my friends for talking a lot about GST, and it was surprising to them that I enjoyed the unit this much. Because normally computing units are just straight forward lectures on facts and findings.

As I have said before, it was presented in a very interesting way, totally different from other unit presentations.

Thank you so much for making this unit an enjoyable and interesting one.

This is an account, rather than a story, of what happened during the semester. This student appreciated the different way of learning. The fact that he spent a lot of time talking about the classes suggests to me that he had engaged with the learning process.

**GST - Well, what a unit!**

If I got one thing out of the unit then it is a new way of looking at things - life-the-universe-everything.

As this is my last unit I couldn't think of a better way to go out.

I must admit that it has been the only unit where I have been in (during my whole undergraduate and graduate courses) where I have attended every tute - this must say something.
And here we have another student whose class attendance pattern was changed by this unit! So, behaviour patterns changed, interest was maintained and there was a growing awareness that he could look at the world differently. It is interesting to note that all these stories are comments on process. Not one student writes about the content of the classes - apart from appreciating that systems theory was presented in an interesting way, and that the students learnt about world views by the way that they were learning.

It seems to me, when I consider, retrospectively, these stories, my journal entries, observations and reflections on this creative visualisation exercise, that human potential has been extended: at least some of the students tapped into their creativity and intuition, others realised that there were multiple points of view on any situation or problem, while others became aware that there is value in non-analytical thinking.

7.1.2 The Second Iteration

In semester 1, 1994, I did not collect the stories after the creative visualisation exercise. We had a class discussion. The students were reluctant to return to their every-day state of consciousness. They sat in silence, in a very still state. The energy in the room was quiet and still. The students did not want to return from the calm and relaxed state which had been induced by the creative visualisation exercise. I was reluctant to interfere too much with the peace which I knew, energetically, had been induced. My awareness of energetic vibrations associated with altered states of consciousness had become more finely-attuned in the two years since I had last done such an exercise in class, consequently, I was happy to let the calmness, centredness and stillness, which I could read in my body, inform me that depth learning had
occurred. I identified strongly with the reluctance to return to the intellectual domain. Often, I do not want to come out of a pleasant, meditative state.

7.1.3 The Third Iteration

In semester 1, 1995, the next time I took this same class, I did gather some accounts of what had happened during the exercise. I was most interested in the written accounts which were produced as the students returned to their every-day state of consciousness. I have included excerpts from these accounts that highlight the experience of being in an altered state of consciousness, moving along the transition paths between states of consciousness; and reflecting on the experience. I believe that, because it was in the transition between states of consciousness that the accounts were written, this is where the insights, realisations and depth learning occurred.

7.1.4 Being in an Altered State of Consciousness

All I know about the skill came to me in the relaxed state. I am still conscious about it.

Student Comment (Semester 1, 1995)

I saw a room of "memories" in images which had colour and moved. Snatches of all memories not just my own. As if it were a stone-hewn room which contained all the world's memories. I was aware of the consciousness of my own species.

Student Comment (Semester 1, 1995)

The experience in the room was one of tranquillity. There seemed to be a gentle force or presence of another watching over me as I practised my task. There was no pressure, no deadlines not even any speech, just a presence of another (like a ghost) watching over me like some kind of guardian. It seems I felt destined to succeed at the task from the beginning. The whole experience was positive.

Student Comment (Semester 1, 1995)
7.1.5 Moving Along the Transition Paths Between States of Consciousness

I felt my mind detaching from the body and flying up into the sky and I visited places in Europe that I saw when I was young. At one moment I felt a strange sensation in my spine. Then gradually I woke up to the reality of the classroom. Something magic is happening. We have unexplained powers in our mind. We can travel in space and time with no effort and visualise reality that does not exist.

Student Comment (Semester 1, 1995)

I don’t want there to be any noise, rustling of paper and pens, people speaking for it will disturb the feeling I have in my head. Its content and at peace and sleepy, yet not. Although I think that the stresses of the morning and yesterday will resurface perhaps I can visit this place again and feel quiet and free.

Student Comment (Semester 1, 1995)

... coming out I felt relaxed and curious about what will happen next time. I require this skill.

Student Comment (Semester 1, 1995)

When I went into the room I felt a force of wind on me. I personally couldn’t feel my legs or any other part of my body but when I met my teacher, I could realise before her telling me what I was doing wrong and at the same time what I needed to do. It seems to me that somehow that is there within me but I didn’t realise it. Also, now that I’m back after the exercise, I feel more relaxed and more motivated.

Student Comment (Semester 1, 1995)

The second comment demonstrates a reluctance to return from a peaceful state of mind.

7.1.6 Reflecting on the Experience

Relaxing. Stress is slowly removed from my body. I grow stronger as the stress dissipates. An awakening, one which reveals that stress is unnecessary.

It is only a bad habit that is learnt by bad surroundings and negative feelings that people feel or give off.
Chapter 7: In the Classroom

Student Comment (Semester 1, 1995)

...one by one I focussed on each skill. I was able to see clearly the methods I used in these skills, and visualised possible ways to improve them objectively.

Student Comment (Semester 1, 1995)

...I do feel better for the experience I need to go again - many times.

Student Comment (Semester 1, 1995)

I split. My mind became the observer as well as the participant.

Student Comment (Semester 1, 1995)

Included in the accounts after the creative visualisation exercise were the following comments:

"I felt calm", "My mind wandered", "I felt my mind detaching from my body", "The experience was one of tranquillity", "My heart-rate slowed down", "I feel quiet and free", "I was reluctant to leave the room", and "I feel revitalised, youthful and flexible".

The energy in the room was calm and still, even as the students wrote their accounts of what the experience had meant to them. My growing awareness of the importance of moving in and out of other states of consciousness, together with the skill and experience in being able to lead such an exercise, meant that I was able to gather and interpret data in a much more subtle way. This set of data suggests to me that depth learning occurred as the students recorded their accounts of their experience in an altered state of consciousness on the journey back to every-day consciousness - in other words in the transition between states of consciousness.

Another outcome that I can give was when I was 14 I became a Buddhist monk for a week. During that time we were taught how to meditate. I initially thought meditating was simply sitting down and being as quiet as possible. This is not exactly the case. Meditation involves relaxing the mind and letting go of everything and being able to do this for long periods of time was very difficult for me. Meditating for 5 minutes seemed to last for about 20 minutes, time past extremely slowly. During the end of the week I finally realised to my self why we meditated. It serves as a way to relax, calm, and refresh yourself. Being 14 I thought this realisation was a revelation. After that experience, meditation became a daily routine, this lasted for several years and then I stopped because of the pressure of college, learning to
drive, moving, etc (ironically that would have been the best time for meditation). During the lecture where we did a meditation exercise, I realised how I had forgotten that meditation can be so relaxing. This may seem small and insignificant but it was quite a big thing for me.

Student Comment (Semester 1, 1995)

The fact that such a memory had been evoked suggests to me that this student tapped into previous experiences of being in an altered state of consciousness and into the benefits that arose from being in such a state.

7.1.7 Telling Stories, Reading Poetry - or Putting Soul into the Classroom

I view the course structure, curriculum, faculty rules, examinations and the like as the constraints within which I work. It is within each class that the innovation takes place. While each unit I teach has its set curriculum and class-plan, which is set down long before each semester starts, I regard this class-plan as direction only. Sometimes we, as a class, negotiate the order, or, if a topic has not been listed and it appears necessary to the class, a lesson on the topic is included. A class that is difficult to approach is one on belief systems in General Systems Theory. The first time I taught belief systems I tackled it just like any other topic - put it on the printed list that went out to the class, mentioned it at the end of the previous class, then went straight into the material. This was received with apprehension and fear, and the barriers went up. I had a class that felt threatened. The collective attitude in the class was: "I don't believe in God. We don't need to talk about religion. What has this got to do with a course in computing, anyway?" This left me wondering how to delve into what I think is such a vital area without threatening the class.

The following semester, when I taught belief systems, I set the scene quite differently. This time, in the preceding class, I suggested some alternative topics for the following lecture, belief systems being one of them. I also said that I would not be looking at religion, God, or any such topic. I reminded them that Boulding, in his nine-point scale, had little to say about transcendental systems and that Checkland regarded such
systems as being beyond knowledge. The class opted for a lesson on belief systems and I spent the next few days not knowing how I would present the material and, at the same time, I felt confident that I had set the scene correctly. So, I wrote some poetry, found a mythical tale that I had written the previous year, laid out a Tarot reading and gathered together some listening exercises that I thought might fit the topic. And it happened this way:

Spell-bound they sat  
as the story was told

Not distracted at all  
as a man crept in late

A tale of a prince wandering at large  
his soul mate to find

Travelling his lands  
from town to town

Seeing the charms  
the baubles and beads

Growing weary at last  
with his fruitless search

Away from the masses  
he ventured among trees

And eventually he found  
the hag from the bush

For here she practised  
her magic and spells

Four-legged friends  
to receive her spells

So he told her the woe  
that lay in his heart

How sad that he felt  
no lover for him

No beautiful bride
Chapter 7: In the Classroom

no son and no heir

And she looked at him long
and promised to help

If he returned
next day when it dawned

She spent the time
gathering her wares

As he slept at long last
with hope in his heart

.
.
.

And so the tale
kept them in suspense

They shifted their minds
into time in between

Now ready to share
in what they believed

Fielden (1993)

Some of the students told me later in the day that the conversations that were
generated from that class went on for hours into the afternoon and it seemed to me
that we had all made a major shift in our understanding. Their motivation to learn had
moved within, my confidence in following my intuition had increased and the ambient
atmosphere in the class had become more united. And this is one way in which I bring
soul into my work, modelling for the class an alternative way to be, to think and to
learn: explicit in the use of creative writing and implicit in setting the scene for
acceptance of other ways of learning. Soul is that which is felt within, that which
touches the heart. We do this as we get in touch with our intuition and as we
experience this in a group.
Prince Alfred was very handsome. He was tall with amazing pale blue eyes, blonde hair and skin tanned pale bronze. He was slim, yet strong, and he walked well. He took joy in the way his body moved and he kept himself fit roaming the countryside and meeting with the people, swimming in the lakes and rivers and riding his horse from one end of his father’s kingdom to the other.

Prince Alfred had reason to roam his father’s kingdom. The laws of the land were very powerful and if Alfred was ever to inherit the rule of this kingdom, he would need at least one wife to help him to do this. Inheritance could only occur if a man had a wife, for lands and possessions were always passed down the female line. A man who did not take a wife was nothing. He possessed nothing at all. The laws also said that a man could have more than one wife, but he had to have enough energy to service the needs of every wife he had. Most men preferred to have just one wife, but there were a few men who had two or three wives. And it was the same for women. A woman could have more than one husband, but she in turn had to have sufficient energy to service each husband.

Prince Alfred had no wife, and it was his task in life, just now, to find himself a wife. The customs of the land did not make this an easy task, for a man could not ask a woman to be his life-mate. He must wait until a woman asked him, and then he had the right to say yes or no. This put Prince Alfred in a very awkward position. His position in life was a grand one, second only to the king. There were many ladies who admired his good looks, his pleasant manner. But they were also in awe of his position in life. Few ladies were game enough to ask him to join with them for the rest of their lives.

Alfred had spent many fruitless months roaming the lands meeting all the ladies in the land. At each village that he visited he was greeted with due ceremony. He was wined and dined and the ladies danced for him, the minstrels sang and the men duelled. Alfred would then inspect the ladies as they paraded before him. If any lady caught his eye, he then turned to his hostess who would talk in private to the lady of his fancy. Sometimes he bedded the lady of his choice, but more often than not he dismissed her after only a few words. He never seemed to be able to get below the surface, the giggles and the fawning, the desire to please and the honour of being chosen.
Chapter 7: In the Classroom

Alfred was growing weary of this ritual, village after village. He just wasn't getting anywhere and he had been trying for months. He had put a few weeks before the Midsummer Revels, the time when pledges were made for life-mates. If he could not find a wife he would have to wait another year. His whole system cried out for a woman with whom to share his life.

And so Alfred felt the need for peace and quiet, for some solitude. Time to reflect on what he had been doing day in and day out for the last year, and time to reflect on the stuck place he was in. Alfred woke the next morning, with a heavy heart and a sore head - he had drunk too much wine the night before. He had wanted to blot out yet another failed attempt to find a woman. He had not even bedded a woman this night. He had no lust in him. That had long since gone.

Alfred found himself walking away from the village, from the noise and the people. He knew they meant well, but it was all too much for him this morning. Alfred found himself walking on a pathway that led into the forest, and, as he walked it became darker and darker as the trees became thicker and the rich vegetation blocked out the sunlight. Soon he found himself by a river, and in the distance he heard the roar of the water as it fell over a cliff in a mighty waterfall. He found himself immersed in the sensuousness of his surroundings and, for a time, he lost himself in this place.

He was startled out of himself by a voice cracked with age and disuse. Before him stood a very old woman. At least, he thought it was a woman. She was very stooped, and her skin hung in folds on her. Her hands were gnarled and spotted with age, her grin was a toothless grimace. He had never seen anyone quite so ugly or so old in his life before. Alfred failed to see the sparkle in the black eyes hooded by deep brows, he was so taken aback by the sheer ugliness of the woman.

When she asked him what he was doing so far into the woods, he didn't quite know what to say. He thought for a bit before he finally decided to pour out his sorry tale the tale of how he had been searching for so long and how he had not been able to find a wife.

As he talked the old woman sat and listened, and if he paused at all she said, "Keep talking, just keep talking. I want to hear it all." And so he just kept talking until he could talk no more. Sometimes he stopped to weep with the frustration of it all, and she just sat beside him and patted his hand. Once Alfred had poured out his story he began to feel a little better and he turned to the old woman and said, "What can I do
now, for I have seen every woman in the land and there is not a single one to suit me." The old woman thought long and hard, for so long, in fact, that Alfred feared she had fallen asleep. Finally she said, "I have a plan. Meet me here at the same time tomorrow and I will tell you what you must do. This plan will not fail."

Alfred returned to the village, dined by himself, saying to his host that he wished to be alone this night. He went to bed early, with a little more hope in his heart. Somehow it had eased his load, just telling his story. He wondered about the old lady. He had not even asked her name, and he felt ashamed of himself. He had been so immersed in his own sorrows that he had neglected the most elementary of courtesies. He reminded himself to ask her name when they met again next day. As he went over this extraordinary day in his mind, he realised it was the first time since he had been a very small boy that anybody had really listened to him. He remembered his favourite nursemaid who would listen so intently to him when he was small, and how much she comforted him all those years ago. It brought a lump to his throat, just to think about it. He had had the same feeling when he had told his tale to the old woman in the forest - the feeling that someone else really cared about him. He wondered a little about what her plan might be and slept easy for the responsibility had been lifted from his shoulders. He had some help to find a way to solve his problem.

Meantime, the old woman had returned to her hut in the depths of the forest, where she lived all alone, save for her animal friends. She was a friend to all the animals of the forest. They came to her if they needed healing, and they guided her to where she could find food and herbs for her healing potions. She had not ventured out of the forest for many years, and the memory of why she had chosen to live in this way had grown dim. It always made her feel uneasy to go too close to the edge of the forest. There were vague memories of pain and broken limbs, of being punished for what she did well - for healing animals and tending to the women as they brought forth new life. This was her special gift. Now it was only the animals she tended. The memories of new babies came flooding in as she thought about the dilemma facing the beautiful young prince. He would father beautiful children - when he found the right woman. How she would like to bring those children into the world.

But now it was time to let her mind dwell on the prince's problem. So she wandered around her hut, talking to the animals, letting the thoughts in her mind have the freedom to bounce around. She knew from long practice that clarity would come as long as she didn't try to think too hard, or too rationally about the problem. It was sufficient just to let the thoughts be.
She made herself an evening meal and fed the animals who came to sit with her in this thinking time. She took solace from their presence, and gathered strength from their support. Slowly, very slowly, a plan started to form. As it gathered momentum she danced a little jig - as lively as her ancient limbs would allow. This plan was a beautiful plan. It would surely work. It was simplicity itself.

She gathered the herbs and plants she would need for the morning, for the meeting with the prince. She mumbled to herself as she estimated the quantities that would be required to weave the spell that would start the plan working. When she had finished her preparations she went to bed and slept soundly, dreaming only of the beautiful babies the prince would have with his fine lady.

Next morning dawned fine. A good omen for her plan to work. The old woman picked up the bundle she had assembled the night before - a large pot and some fire-sticks and started on her way to where the river fell over the cliff. It would take her at least two hours to prepare the potion and it had to be done where the spell was cast. She wanted to be there in plenty of time. This was a task that could not be rushed. She was happier than she had been in a long time. This is what healing magic was all about and it delighted her that she could use her skills to help the prince.

Meanwhile, the prince was preparing himself for his meeting at midday with the old lady. He wasn’t quite sure how long it had taken him to find the place by the river yesterday, and he didn’t remember how long it had taken to walk back to the village. He just seemed to have lost track of time altogether, yesterday. He wanted to be there in good time, and he knew he could always sit silently until the meeting time. He pondered on the phenomenon of losing track of time and still remembering the way, as he walked. It was as if he had stumbled into a land where time had no meaning. He decided to stop some distance from the river, and wait for the right time. Today he had his timepiece with him. He didn’t want to miss this meeting with the old woman, but neither did he want to seem over-eager by arriving too early. Stopping some distance away to wait for the right time was a good thing to do.

Now it was time for him to move on to the meeting place. As the path he was walking on started to follow the river, he became conscious of another presence, the presence of the old woman. He startled himself with this. It had been a long time since he had been able to use this ability - of knowing about another person before they were physically present.
Chapter 7: In the Classroom

As he turned a corner on the path and the full blast of the waterfall could be seen and heard, he saw the old woman crouched over a fire, tending to a steaming pan. He was pleased to see her, and knew deep within himself that this was a very important meeting.

His heart pounded as he greeted the old woman. "What is your name?" he said. "I neglected to ask you yesterday. I do apologise."

"Shula is my name," she said. "It was my mother's name, her mother's name and so on for many years. It is passed from mother to eldest daughter and with the name is passed the gift of sight and the gift of healing."

"You can see into the future, you mean?" he asked.

"Only sometimes, now. I am getting old, and my one regret is that I have no daughter to pass the gift on to."

The prince's heart went out to her as she told him this. He hoped to have many fine children with his life mate.

Slowly, she stood up and said, "I am ready to begin. First you must take off all your clothes, for your appearance may change and your clothes will no longer fit you." The prince was quite alarmed by this, but, nevertheless, he felt powerless to do anything else, so he stripped off all his clothes.

"Now," she said. "I am going to transport you to a land far away. You will return with a lady who will please you in every way possible. I make only one small request before you do this. I would like to take your first born girl, whom I shall call Shula, and train her in the healing magic ways." The prince readily agreed to this. It seemed a small enough price to pay for the gift the old woman was about to give him.

"You must drink this potion now," she said. "And then you must go and sit on the very edge of the cliff, where the spirits of the forest will help to transport you. You will be gone for two days and when you return your life-mate will be with you."

The prince did precisely as he was told, drinking the potion, then going to sit on the edge of the cliff. He pushed all doubting thoughts from his head, for he knew that doubts could kill the magic. At first it seemed that nothing was happening, and then, very slowly, he felt himself lifting off, felt his spirit depart from his body. It was a strange experience, as he watched himself make his way beneath the waterfall. Here there was a rock ledge, and about halfway along the ledge was an opening. He felt himself being drawn into the opening. At first it was so dark that he could see absolutely nothing. Then, very slowly, as his eyes became accustomed to the dark, he
made out the strangest drawings and shapes on the walls of this underground pathway that led deeper and deeper into the bowels of the earth.

Eventually, he saw a tiny light in the distance. He was eager to see more of the light and it drew him on, enticing him into the light. Now the passageway opened out onto a huge cavern. In the centre of the cavern was the most beautiful crystal altar that he had ever seen. He stopped to absorb the sheer beauty of the crystal. The light that had enticed him was coming from the crystal. The light seemed to pulsate from it.

He was truly amazed by this and stood mesmerised until he felt a slight breeze and there, in front of him, was the most beautiful woman he had ever seen. She stood silently in front of him, arms outstretched in welcome. He had no thoughts, but just walked straight into her arms. She embraced him, and then guided him to stand before the crystal altar. Here they stood in silence, as the light-energy pulsed through them. The prince was in pure ecstasy. Never had he experienced anything quite like this before. It was as if the energy from the light was giving a blessing, inviting him to join with this beautiful lady. There was no speaking. Everything was in silence, and yet he felt as if the joyous singing of angels was in his head.

As he joined with his beautiful spirit woman, he was sure that this woman would be fruitful and a baby would be born. Thoughts of how he would bring her back into the other world never entered his head. They were in the ecstasy of the moment and he knew that here was his life-mate.

Slowly they turned, hand in hand and moved away from the crystal altar. The light energy was still pulsating through their whole beings, making their steps light, as they danced away from the light. Now the prince retraced his steps, past the wondrous shapes and drawings in the rock of the pathway, but this time with his spirit-woman by his side. It seemed no time at all before they were on the rock ledge underneath the waterfall.

Now he felt himself soaring through the waterfall, soaring into the air and finally coming to rest within his body on the edge of the cliff. His spirit-woman still held his hand as he came back into his body, and into the other time and place. He saw, too, that his spirit-woman had taken on the beautiful shape of a woman, raven-haired and black-eyed. Now he could talk, so he asked her her name. "Shula," was the reply. "I am Shula of the forest. When we look within that is when we truly see."

Fielden (1992)
Once again, after each telling of the story, no matter what stage of the research process I was at, the class became still, was reluctant to discuss or analyse the story and was happy to accept a mythical tale, a highly improbable story, that explored ideas that do not belong in a rational/logical domain. I received no direct feed-back from students about the use of stories and poetry in 1992 or in 1994. I did receive feed-back in both semesters on the “atmosphere in the class”, “the unusualness of the classes”, “the refreshing nature of the lectures”, as well as the sceptics’ comments on the relevance of such techniques to computing. In semester 1, 1995, for the first time, I received direct feed-back on the use of stories and poetry:

Stories and poems were an excellent way of putting points across.

Student Comment (Semester 1, 1995)

Your poem/discussion on RISK has made me think about my life and what I want for the future. My past has been hassle-free because I plan and only resolve situations where I can “see” the outcome.

Student Comment (Semester 1, 1995)

GST has shown me a different way of learning through stories and poetry.

Student Comment (Semester 1, 1995)

The depth, richness and complexity of the student feed-back arising from this exercise in semester 1, 1995, suggests to me that the learning process had deepened effortlessly, insightfully and creatively, going far beyond the normal, traditional learning experienced by these technically-oriented students. Systemically, the various forms of feed-back have provided me with the richness and diversity that would have been lost using a systematic approach.
7.1.8 The Depth Learning Indicators from Student Feed-back

From the literature (Caine & Caine, 1991; Deci & Ryan, 1985; Lozanov 1978; Bruner, 1962; Piaget, 1952) depth learning can be measured by indicators of intrinsic motivation. These indicators of intrinsic motivation are:

1. Clear evidence of student involvement, creativity and enjoyment;
2. Many different moods, including playfulness and serious thought;
3. Students asking questions and making observations that link content to life;
4. Personal life themes, metaphors, interest and dreams being engaged. Introducing course content at home, and play in class;
5. Signs of continuing motivation or student interest expressing itself above and beyond the dictates of the class;
6. Signs of positive collaboration;
7. Dealing appropriately with dissonance; and
8. Suggesting relevant projects of their own.

I believe that all these indicators of intrinsic motivation are present in my students suggesting that depth learning has taken place.

As this research project has evolved, more and more of the indicators of intrinsic motivation have been present in General Systems Theory. In semester 1, 1992, there was clear evidence of student involvement, creativity and enjoyment. This is illustrated in the creative stories written after the creative visualisation exercise, the conversations carried on long after classes finished, and the fact that the attendance rate was high in lectures even from those students who did not attend lectures normally. One student even brought a friend along to his tutorial presentation. Now, this had never happened before in any class that I had taught.

I enjoyed the unit vastly. I got teased by my friends for talking about GIST and it was surprising to them that I enjoyed the unit so much, because normally computing units are just straight forward lectures on facts and findings.
Chapter 7: In the Classroom

Student Comment (Semester 1, 1992)

As we explored the content of the course with many different exercises - dancing, chanting, playing with string, brain-storming, writing stories meditating, listening exercises - many different moods were experienced in the class. In semester 1, 1992, not everyone was at ease with these exercises. Some viewed them with scepticism and distrust:

I was uncomfortable with some of the warm-up exercises. I guess because they don’t occur anywhere else.

Student Comment (Semester 1, 1992)

Non-traditional ways of teaching were a bit strange.

Student Comment (Semester 1, 1992)

Student interaction has always been encouraged in my classes. Being able to direct this process effectively and efficiently has been an evolving process. While student interaction was appreciated throughout the project, there was some dissatisfaction in semester 1, 1992, from those students who tended to dominate the discussion:

Two or three members of the class tended to dominate discussions.

Student Comment (Semester 1, 1992)

The teaching style allows the student freedom to express their views and opinions - this is not found in most units. This enables us to think more creatively compared with the traditional style of taking everything straight from the books allowing little room for expressing your own opinion.

Student Comment (Semester 1, 1992)

Integration of class learning with the rest of life - another indicator of intrinsic motivation - was evident in the student feedback in semester 1, 1992. The student who enthused to his friend about the course, and the one who brought his friend to class, both wanted to share what was happening in the class with a wider community, and the student who continued to write his creative story long after the class was over showed signs of continuing motivation above and beyond the dictates of the class.
Students continued to work on relevant small-group projects of their own choice, but this warranted no comment in the student feedback received in semester 1, 1992. Another indicator of intrinsic motivation is dealing appropriately with dissonance. Student feedback suggests that there was some dissatisfaction - a few students dominating discussions, uneasiness with exercises and an expectation that a set of structured notes would be available. Such dissatisfaction was not aired in class discussions, and remained below the surface, except for the final student appraisals at the end of semester.

In semester 1, 1994 in General Systems Theory, there was evidence of student involvement, creativity and enjoyment. The following comment suggests that initial negative opinions of the unit were overcome, reaching a state of enjoyment:

I began thinking at the start of the semester what a crap unit this was going to be. It sounded so boring...the unit wasn't structured in the usual manner and this was quite different and fun. This is what made me learn and want to understand more about GST. I learnt far more than I thought I would.

Student Comment (Semester 1, 1994)

As in semester 1, 1992, the variety of exercises and methods of presentation which induced many different moods in the classroom attracted comment:

It is not easy to be passive, just a passenger in this unit. To learn you must be actively involved as you are not spoonfed.

Student Comment (Semester 1, 1994)

These different methods were still met with apprehension by some students:

Presentation of the unit was a little too way out for my taste, but stimulating generally. I was impressed with Kay's honesty in giving alternative theories and giving her opinions of them.

Student Comment (Semester 1, 1994)

Observations on the links to life were also evident:

GST is essential to keep students' minds open to other systems that are part of this world.
Chapter 7: In the Classroom

Student Comment (Semester 1, 1994)

I am more aware of the issues taught now - it has made me open my thoughts and perceptions towards the world, people, life and most of all, myself.

Student Comment (Semester 1, 1994)

This last comment indicates to me that this student has linked the different parts of the course at a personal level as well.

Some students were of the opinion that everyone should do General Systems Theory and, in fact, in semester 1, 1995, I had students in the class who were persuaded there by their fellow students from semester 1, 1994:

This unit should be taught to everyone in the conceptualisation of systems.

Student Comment (Semester 1, 1994)

If only other units could engender as much thought and soul searching we would produce much better students out of our institutions.

Student Comment (Semester 1, 1994)

The first signs of positive collaboration appeared explicitly in semester 1, 1994, in the student feed-back:

Closeness amongst the lecturer and the students was very good.

Student Comment (Semester 1, 1994)

While the collaboration in lectures was commented on, there were still no comments on the importance of students collaborating together on assignment work.

In semester 1, 1994, we experienced the “back-row” syndrome occur (ch7. p171). This was dealt with effectively in class, and no such further incident occurred. This is also an indicator of intrinsic motivation pointing to, in turn, depth learning. While students engaged in their own relevant small-group project, the importance of doing this exercise attracted not comment.
There was also some dissonance in the class that was not aired - what was assessable, and what could possibly be examined, the fact that there appeared to be no benchmark for assessment in the unit, the fears associated with attention to process as well as content, and the difficulty some students had in coming to grips with the theoretical concepts.

Questions asked in the end-of-semester evaluation in semester 1, 1995 were:

1. What is the most important thing or things you feel you have learnt this semester?
2. What positive or constructive feedback can you offer?
3. What would you do if you were teaching General Systems Theory?
4. Any other comments.
5. Do you have a good understanding of the content of General Systems Theory?
6. What would you like to see more of?
7. Do you have any comments about tutorials?

The honesty and directness of the responses suggested to me that these students had opened up to depth learning. It also seems to me that human potential had certainly been extended. It is difficult to tell, directly, whether the depth learning had happened in the dynamic. It seems to me that depth learning certainly took place. A small number of students was aware of the importance of moving from one state of consciousness to another. For most, however, it was still an "unaware" process. Even if it is an unaware process for students, that does not invalidate the fact that it happens. The fact that I can read the energy of a group of people means that I know when the energy state is conducive for depth learning to occur. Usually, I do not look for other corroborating evidence. I accept what my body awareness tells me.

While I have been collating results from data gathered over a number of semesters in different units, I have realised that my teaching style adapts to the content of the unit I
happen to be teaching. This is unit-dependent and not semester-dependent. In some semesters I have taught in up to three different units. I teach differently depending on the content of the course. In General Systems Theory I can afford to be more participative, collaborative and democratic. In Computer Practice, because of the heavy work-load in the unit and the rigid deadlines throughout the semester, I have to be more autocratic. I insist that all groups have a student leader, that all deadlines are met, that project plans are adhered to and that students must have all the technical skills before attempting the unit.

Indicators for intrinsic motivation - a measure of depth learning abounded. I didn’t receive any negative feedback. No students were confused at the end of the semester, not even those students whose second language is English and whom I had not been able to reach in previous semesters. As my confidence grew, as I lost my self-consciousness in trying different approaches to teaching and as I became even more open and honest in my style so the trust in the class grew. Indeed, there was ample evidence of student involvement, creativity and enjoyment. There are many comments on how the stories and poetry and creative visualisations were enjoyed, and this time, also, how the intellectual content was appreciated:

By talking about my experiences in GST I have been a catalyst to change other students’ study plans. They are now planning to study GST next year and I believe this will be an iterative process.

Student Comment (Semester 1, 1995)

I spoke to my inner guide for the first time. I consider this to be an emergent property of my interaction with this unit because it is something I have been trying to do unsuccessfully for a long time. I think I achieved it this semester because my mind was more open to new experiences than it has ever been before.

Student Comment (Semester 1, 1995)

My experience in the unit was a joyful one. I have gained new knowledge on understanding others and in my perception of the environment.
These comments indicate to me that student involvement went as far as encouraging other students to enrol in the unit. The creativity and enjoyment in being able to access other parts of self, as well as knowledge of others, is also indicated clearly:

I believe that the continuous action of new emergent properties was a good mental gymnastics so that at the end of the course I can think in a systemic way in a natural and relaxed mode.

The variety of teaching styles, more finely-tuned to the topic, and relating to the students and to myself, together with the relevance of the exercises to content matter, all led to the creation of many different moods in which to learn:

How wedded I was to a scientific method approach to learning. But, more important, how to break away from that method to systems thinking. A much more creative “opening outward” of my mind. It opens up the boundaries of just about any subject, and then real learning occurs.

The interactivity so encouraged was more focussed, the rules of interaction were accepted and discussed more openly, others were honoured as they spoke and greater attention was given to listening skills. This meant that students were far more open to sharing the rest of their life in class and in taking systems ideas and styles of interaction out into the wider community:

Learning in the form of games, meditation, story listening, creative visualisation and poetry hearing was refreshing.

Lectures were dynamic, flexible and interactive.
Chapter 7: In the Classroom

I retained the information better because I could relate it back to a story or a poem that the lecturer had written or to a game that we might have played.

Student Comment (Semester 1, 1995)

The neck-passing exercise made me feel like part of the group (increased familiarity) and thus enhanced my learning potential because it raised my interest.

Student Comment (Semester 1, 1995)

The multiplicity of strategies I employ in class not only are appreciated but also are acknowledged as means of deepening the learning process.

The level of honesty and vulnerability indicate the level at which interaction took place.

It is at this level that depth learning takes place effortlessly, joyfully and creatively.

Students were, indeed, taking their learning out into the world:

That great lump of information that over a period of 15 weeks gradually turned into knowledge and understanding that could be (and was) applied to real world situations. I was able to apply a number of concepts in GST to my day-to-day work and I got a greater insight into Systems Analysis (and not just computer-based information systems).

Student Comment (Semester 1, 1995)

I think that this is one of the most valuable units I've ever done at University. This has been through your examples which use every-day situations and also the way you've made me think about me, how I feel about different things, the way I think, its made me look at things in different ways. Its been a wonderful experience. I hope that this unit will encourage me to think more and consider things and not be lost soon after semester. I guess that's up to me though.

Student Comment (Semester 1, 1995)

Many different moods were explores including playfulness and serious thoughts. The following student comments in semester 1, 1995 support this claim:

Learning in the form of games, mediation, story listening, creative visualisation and poetry bearing was refreshing.

Student Comment (Semester 1, 1995)
Chapter 7: In the Classroom

Lectures were dynamic, flexible and interactive.

Student Comment (Semester 1, 1995)

I retained the information better because I could relate it back to a story or a poem that the lecturer had written or to a game that we might have played.

Student Comment (Semester 1, 1995)

The rock-passing exercise made me feel like part of the group (increased familiarity) and thus enhanced my learning potential because it raised my interest.

Student Comment (Semester 1, 1995)

The multiplicity of strategies I employ in class not only are appreciated but also are acknowledged as deepening the learning process:

Students were asking questions and making observations that link content to life:

I learnt to question and reflect on what I had read and found that I read and study entirely differently.

Student Comment (Semester 1, 1995)

I can apply what I've learnt to other units and other systems, especially at work.

Student Comment (Semester 1, 1995)

By openly questioning what we hear and experience - without bias - we gain a more open view of the society we live in and the people we interact with.

Student Comment (Semester 1, 1995)

These three comments indicate to me that questioning and making observations were newly-acquired skills that changed the way in which the students studied and worked.

Personal life themes, metaphors, interest and dreams were engaged. Course content was introduced at home and play was introduced in class:

One of the most important outcomes of my participation in this human activity system has been the changed way in which I think about myself. The system made me focus on my
thoughts, views and behaviour. Nothing I have ever studied before has made feel there is a need for self observation and reflection.

My gut feeling is that I have finally played an active role in a unit, and learned, not just from studying texts, but from listening to other students points of view.

Student Comment (Semester 1, 1995)

This student wrote a beautiful essay on systems, science and religion by telling her own story of growing up as a Roman Catholic, going to a catholic primary school and a state high school before coming to university. She described her personal struggle with the ideas about the world conveyed by her religion - creationism - and how this conflicted with the traditional views of science. She thanked me for the opportunity to be able to explore issues that had bothered her throughout the whole of her formal education. She used her personal story to illustrate the connections between science, systems and religion and made herself extremely vulnerable in the process. To me, this is a classic indicator of intrinsic motivation through personalising the learning and thereby reaching depths of learning not achieved previously:

In this unit I have formed the first two friendships which I feel will survive post-Uni. I believe that it is because of the nature of the unit and the research method in particular which required that we give of our inner selves rather than our academic opinions. That opening of myself to others has formed a lasting bond. This was an unexpected outcome.

Student Comment (Semester 1, 1995)

The personal themes also included developing deeper and stronger connections with others in the class.

There were signs of continuing motivation or student interest expressing itself above and beyond the dictates of the class:

Learning for its own sake is much more important than the formal gathering of grades, degrees etc.

Student Comment (Semester 1, 1995)
Chapter 7: In the Classroom

By sharing my own experiences with metaphysics I have encouraged another student to pursue her own interests in this area rather than to suppress them because they are not logical or sensible.

Student Comment (Semester 1, 1995)

I feel that I can move on from this system now and take what I have learnt into the real world.

Student Comment (Semester 1, 1995)

The comforting feeling that I as an individual have something worthwhile to contribute to this world, and a deeper understanding that everyone, as individuals, also have something worthwhile to contribute.

Student Comment (Semester 1, 1995)

I believe that these comments indicate clearly that these students gained far more than any one of them would have thought possible.

There were also signs of positive collaboration commented on by the students in semester 1, 1995:

As a result of increasing participation I had shifted my level of focus from a "basic" level of participation to that which is complex and highly dynamic. I am now more focussed on my level of learning and how I can share it, as being the product of participation rather than the grade.

Student Comment (Semester 1, 1995)

My gut feeling is that I have finally played an active role in a unit, and learned, not just from studying texts, but from listening to other students points of view.

Student Comment (Semester 1, 1995)

I have learnt the advantages of taking risks by sharing with others how I feel about things rather than only how I think about things.

Student Comment (Semester 1, 1995)
Not only do these comments show signs of positive collaboration, but also they show an appreciation of the learning benefits of sharing with others. The insights gained from sharing on a feeling level with others are also acknowledged.

A rabbi had a conversation with the Lord about Heaven and Hell. “I’ll show you Hell,” said the Lord and led the rabbi into a room in the middle of which was a very big round table. The people sitting at the table were famished and desperate. In the middle of the table there was a large pot of stew, enough and more for everyone. The smell of the stew was delicious and made the rabbi’s mouth water. The people around the table were holding spoons with very long handles. Each one found that it was just possible to reach the pot to take a spoonful of the stew, but because the handle of the spoon was longer than a man’s arm, he could not get the food back into his mouth. The rabbi saw that their suffering was terrible. “Now I will show you Heaven,” said the Lord, and they went into another room exactly the same as the first. There was the same big round table and the same pot of stew. The people, as before, were equipped with the same long-handled spoons - but here they were well nourished and plump, laughing and talking. At first, the rabbi could not understand. “It is simple, but it requires a certain skill,” said the Lord. “You see, they have learned to feed each other.”

Hasidic Tale, in Goldberg (1993, no page no)

The following narrative outlines the changes in dealing appropriately with dissonance. A few years ago, when I was still teaching more conventionally, I changed from teaching a first-year unit to teaching a second-year unit. There was the usual unruly element in the first year class: the young men who sat in the back row of the largest lecture theatre in the university and disrupted the class by their behaviour. This is common practice in some classes. In my straight-teaching days, I did not allow such disruption in my lectures, so, with monotonous regularity, the disruptive element was sent out of the lecture theatre. When these same students turned up the following year for the subsequent unit in information systems and sat in the same relative position in the lecture theatre (a somewhat smaller lecture theatre, but they still sat in the back row), there was an audible "Oh, Shit" as I walked into the first lecture for the semester. This was truly a them-against-me action indicative of an autocratic, hierarchical system. I taught content then. Now I facilitate and share experience. (And a further aside. I still do not tolerate disruption in class. However, I handle it as a class exercise
now, rather than as an autocratic act.) In semester 1, 1994, the usual "talking-in-class" phenomenon appeared. After some of the students in the class had complained to me, we started the next class with a discussion about this. Bringing the problem into the open was all that was required to establish appropriate ways of interacting in class. As we discussed the issue I reminded the class about the qualities with which we were trying to interact to respect others at all times - and talking in class distracted other people from listening - and to have a respectful solution to this as a problem. If I ordered people out of the class this would not be consistent with the participative, cooperative environment that I was trying to establish. Interactive classes must be highly-structured if they are going to be successful and stimulate learning.

As I marked the examination at the end of semester 1, 1994, many of the students reflected on this incident in their examination answers to a question on applying participative inquiry to the human activity system of the lectures in General Systems Theory. They had realised that this, indeed, was participative inquiry in practice.

Dissonance was not an issue in the class at all in semester 1, 1995. Any class issue that was a potential problem was discussed before the event. Setting up class interaction guidelines, negotiating assignment and examination procedures, discussing feedback on assignments and final grade appeal procedures, all of which were possible causes of conflict, were discussed openly thus building trust, and reducing dissonance. On one occasion in the class, when we were discussing how to split the marks between report and presentation for an assignment, one of the more outspoken members of the class was absent. The rest of the class decided that they would make the decision quickly and easily, before he arrived. When he did arrive five minutes later, he was greeted by the class with the decision and told that because he wasn’t present, he couldn’t debate it. He accepted this very quietly, knowing that he could have been part of the process, if he had been present. There was no argument. He knew the class rules, that had been adopted collaboratively.
In all the units I teach, students select their own project, either as the whole semester's work, or as part of the semester. This is part of the course structure and it seems, as such, to provide motivation from within because the projects are not imposed onto the students.

One student, in General Systems Theory in semester 1. 1995, created her own visualisation exercise for her tutorial presentation. This was the most creative presentation in the semester. She says:

It was a bit scary letting people that far into my head, but it was wonderful to write and great fun to actually do with the tutorial group.

Student Comment (Semester 1, 1995)

This set of student comments does, indeed, indicate intrinsic motivation. I believe that the comments also show that not only were these students aware of the shifts beyond the rational mind, they were aware of the impact that making such transitions had on their own individual learning. If, as suggested by the literature, depth learning can be measured by intrinsic motivation, then this set of student comments shows that depth learning has taken place.

I believe that one of the biggest advances I made with my research in semester 1. 1995, was in setting up an environment in which the importance of collaborative group-work was realised by the students. I received ample feed back about this:

The most important aspect I found was that it promoted thinking about people and how people operated in groups. This is a very important facet of the IT industry which is poorly covered in the rest of the units. IT involves much working in groups, and students need to be informed and aware of what this involves especially as many jobs call for group skills.

Student Comment (Semester 1, 1995)

I enjoyed the fact that GST was a hands-on subject, that does not get bogged down in the endless reading of textbooks. GST took problems and looked beyond the mere solving of that
problem. It concentrated on other aspects of problem solving such as communication methods and group dynamics. Through looking at systems from the angle presented, a whole new set of questions emerged. It enlightened previous non-looked at areas.

Student Comment (Semester 1, 1995)

It also gave me some good ideas (just a beginning) about working in groups creatively as well as effectively.

Student Comment (Semester 1, 1995)

This unit has opened up a greater understanding of human interaction.

Student Comment (Semester 1, 1995)

7.2 The Story Through Time - Computer Practice

7.2.1 The First Iteration

In Computer Practice, I asked the students to address the following points in writing their evaluations:

1. What have I learnt
2. What did I get out of the unit
3. How our group worked
4. Were the facilities satisfactory
5. Was the unit organised satisfactorily
6. Any other comments.

These evaluations are considered below, with respect to my aims for the unit. Each student in Computer Practice is required to submit, as an essential item of assessment, an individual student evaluation of the unit. This provides feed-back on how the students experienced the semester and it also provides me with ideas for the following semester. It always seems to me that student evaluations are only as good as the level of trust that has developed during the semester. If there is a general level of unrest and
dissatisfaction in the class because the students perceive that the unit is not being organised to their satisfaction, then the ground-swell of tension and disenchantment builds up and the level of trust goes down. Student comments included:

- Computer Practice is the most beneficial unit in the course.
- I am amazed at how much help and support our group received...
- I would not have missed this semester for anything...
- A great learning experience... and

Computer Practice was stressful, tiring, annoying, draining, all consuming, and easily the best unit I have ever taken at the University of Canberra.

and suggest to me that the level of trust was high and that I can trust what the students have reported to me. These evaluations are confidential, and while I have quoted and analysed from them, I have been careful to protect the identity of individual students.

Seventy students were enrolled in Computer Practice for semester 2, 1992. This put an immense strain on all available resources. We had to use a second laboratory - there has only ever been one laboratory in the past. As each group had a different project, I compiled a larger-than-usual list of projects before the semester started. Projects were canvassed from both the private and public sector, as well from across the University.

My aims in facilitating Computer Practice under such stressed conditions were:

1. to make this project unit a valuable learning experience. It is the only unit in the BA in Computing Studies in which students have the opportunity to complete a software project from start-of-design to implementation and, therefore, is the one unit that equips the students realistically for the work-force;

A student can get practical experience and a glimpse of what the computing and information technology industry is all about and what is involved.

Student Comment (Semester 2, 1992)
Chapter 7: In the Classroom

2. to encourage the development of skills for working as part of a team for software development:

...I came to realise all the effort that is required in administering and controlling such a design team, even a small one like this.

Student Comment (Semester 2, 1992)

3. to make the semester enjoyable, as well as being the unit where students work harder than ever before in their degree:

What a great time I've had doing CP this semester, irrelevant of anything else, I had a lot of fun and "There were a couple of people who could have smiled a bit more.

Student Comment (Semester 2, 1992)

All in all Computer Practice was the first real unit I have done. By real I mean real in the sense that this is sort of what it's going to be like in the work force. The understanding of just how much stress and work is involved was not unexpected, but actually going through it was a real experience.

Student Comment (Semester 2, 1992)

4. to develop project-management skills:

What I got out of Computer Practice was a realisation that of all the Information Systems and project management units were actually teaching us something useful. After 2 1/2 years of thinking that they were only so much Bull, you are suddenly forced to use all that they have taught you out of sheer necessity.

Student Comment (Semester 2, 1992)

5. to implement software with tight deadlines imposed:

I have learnt to handle stress and pressure.

Student Comment (Semester 2, 1992)

6. to learn how to allocate tasks within a group;

Our group started as a mess of overlapping responsibilities, but eventually we settled down, allocated tasks, and worked properly.

Student Comment (Semester 2, 1992)
7. to develop trust in the class so that co-operation could take place. Both negative and positive comments from the student evaluations suggest to me that this, indeed, happened. Without this level of trust comments such as these would not have been made:

...there was a great spirit in the CP labs this semester. No problems were encountered apart from the occasional inverted filing cabinet or flying Vegemite single. There was no inter group tension which was really good.

Student Comment (Semester 2, 1992)

8. to develop a co-operative spirit in the class. There were the occasional high-spirited incidents, one of which got out-of-hand. One group decided to up-end a filing cabinet belonging to another group. There was some damage done to the cabinet and its contents and it was one of the few times when I had to intervene. I called a meeting of the whole class, told them that I was disappointed in their behaviour and that I would like to see the perpetrators in my office within the next hour. I then left the laboratory and went back to my office. Sure enough, within the hour, the culprits appeared at my office door. It was sufficient that they came - they punished themselves in having the courage to own up. The trust between the students and me was high enough for them to come. I said no more in my office than I said in the laboratory. They knew their behaviour was unacceptable. The students apologised to the owners of the filing cabinet and paid for the damage that they had caused.

Because resources were pushed beyond normal limits, it seemed to me that a way to survive was to encourage co-operation. In the past, Computer Practice has been a highly-competitive unit, with a $1000 prize donated by a computing firm in town. While the prize was still awarded, my aim was to make the co-operation more important than the competition;
We worked as a team rather than as individuals. I never felt that I couldn’t ask for help if I needed it, and I frequently did. Conversely, I was always ready to help anybody else if they needed it...we had excellent group co-operation.

Student Comment (Semester 2, 1992)

9. to allow the students to own as much of the unit as possible. The students set the lab rules themselves - something unheard of in the faculty’s tightly-controlled environment. This aim was challenged by other members of staff, but appreciated by the students.

I think for me, one of the best qualities of this unit was that we weren’t given any strict procedures, we were guided and it was up to us to go out and do it. We had to use our own initiative, skills and techniques we had learnt in the past and had to see where, how and when they were applicable.

Student Comment (Semester 2, 1992)

The best thing about the organisation of this unit was the free reign left to students to sort out the labs themselves...made the unit seem more like our unit...in this semester’s environment a lot of quality products have been produced..." and “This unit has the potential to be run in an “iron glove” manner which would not allow groups to work effectively. Luckily, however, it wasn’t.

Student Comment (Semester 2, 1992)

One of the challenges was the poster episode. One laboratory had a glass partition between a public-access laboratory. Computer Practice labs were only for use by students in the unit, and each student being issued with a key for the semester. The normal arrangement for other units is that students have 24-hour access to any lab and the use of any available computer. Computer Practice students were allocated one computer per group for the semester. So, the students spent a lot of time in the laboratory while they were developing their software project. I was approached and asked if it would be acceptable if the Computer Practice students could put some posters on the glass partitions, as they were starting to feel like goldfish in a bowl and would like a bit of privacy; as well, they would like to brighten the place up. I agreed
that this would be a good thing to do, so the laboratory was decorated with large and
colourful posters.

Now, most of the students in the unit were young men, in the final semester of their
undergraduate studies, and aged around 20 years. Their taste in posters certainly was
not mine, but it was their working space so I did not make too many comments. One
of the young women in the class did not approve of one or two of the posters. Not
long after they had been put up, I had a report, about third-hand, that the Associate
Professor in Computing did not like the posters and that they had to come down -
immediately! The Associate Professor in Computing did not speak to me about this.
He did, however, talk to my laboratory manager, who really did not want to know
about the posters - they were not anything to do with the machines or the software, so
they were not his problem. He began to feel like the meat in the sandwich.

During the next few days I discussed the issue with the students and suggested to them
that if anyone in the lab disapproved of any of the posters then the offending posters
should be taken down. The students surveyed all the students using the lab and did
what I suggested, and two posters were removed.

After a week of messages from on high, during which I was not spoken to once about
the issue, I finally received a phone call late on a Friday afternoon. The command was,
"The posters must come down at once. I am not going to discuss the educational
merits of how you are running CP. Take them down, or I will rip them down. You
have one hour to do this." I had tried to explain to him what I was trying to achieve,
educationally, but this was of no interest to him: neither was the fact that the students
had asked everybody using the lab whether there were any offending posters. After
fuming for a few moments about how the whole episode had been handled, I went
down to the laboratory and told the students that there had been a pronouncement
from on high that all the posters had to come down. However, I also decided to treat
the incident as an experiment. So we, the students and I, decided to remove those posters containing female forms and leave the rest on the glass partition. This was done, the students went back to work, and I went back to await further developments. Before I went home that night, I called into the laboratory to find out what had happened about the posters. I was told by the students that, yes, there had been a visit by the Associate Professor in Computing and that “He was really nice to them” and said “I see you have done what I said”, and had left. And a comment from the class:

The freedom we were given in the labs during the semester was very good, except perhaps for the poster removal incident.

Student Comment (Semester 2, 1992)

Fourteen out of the fifteen groups reported that the most important thing they learnt during the semester was working with other people, both within their own group and in the unit generally. The one group that did not report this was working off-campus, and, therefore, did not have the benefit of having other people around with whom to develop any sort of rapport.

The camaraderie between groups was something I think that was astounding to everybody. If ever a group had problems there would be a line of other group members to help them with their predicament. This I think is the main centring of CP (Computer Practice) is about, not only a group producing a complete program at the end of sixteen weeks, but showing an ability to work with other people and help your fellow workers through their difficult periods . . . and

Student Comment (Semester 2, 1992)

CP taught me responsibility.

Student Comment (Semester 2, 1992)

This last comment was from a project leader. Besides selecting its own project, each group decided how it would organise itself for the semester. Some groups decided to have a project leader, others decided to have areas for which each member was responsible and still others had a democratic arrangement. I usually encourage groups
to have a project leader, mainly because of the time constraints. There just is not enough time to discuss every issue and to reach a consensus. Appointing a leader is a more time-efficient way to operate.

Kay took the attitude throughout the semester that in CP we had learnt all we could have, she was there as a supporting role. If you went to all the final presentations, you would have seen the quality of each project. I believe that this is because of the way the unit was run.

Student Comment (Semester 2, 1992)

This comment is interesting - there is a prevailing attitude, still, that technical skills are what is learned.

7.2.2 Indicators of Intrinsic Motivation as a Measure of Depth Learning

In the description of the process for semester 1, 1992, it is clear to me that intrinsic motivation was the driving force for the students completing their own small-group project collaboratively. Because of the tight deadlines and the pressure under which they worked, there was little time for reflection on how Computer Practice related to the rest of their lives, although the students did realise how important it was to develop the skills for any future employment in information technology. It is also interesting to note that even although the students were working and studying under pressure, there were many student comments about how students felt they had made friends for life in doing this unit.

7.2.3 Second Iteration

There were 50 students in 10 groups in semester 2, 1994. I asked the same set of questions in the individual student appraisal and received a very similar set of responses to those from semester 2, 1992. In semester 2, 1994, I decided to focus on the group process, having gained experience and been able to reflect on what had occurred in semester 2, 1992. One group, which was made up of three Vietnamese students and two Australian students, had a number of group-dynamic problems. One of the Australians considered himself to be a technical expert and looked down on the
technical skills of the rest of the group. There certainly was a difference in technical ability amongst the members of the group, as well as the cultural and language differences. The young man who considered himself to be the technical expert also decided that he would be the project leader. Because he had little regard for the other members of the group, and because he did not believe that they would understand what he was doing technically, he failed to communicate with them. As the semester progressed, the group became more and more dysfunctional, until the group staff supervisor consulted with me. Because of cultural differences (my observation is that many Asian students do not like to criticise anyone, nor do they like to take a leadership role), because of lack of self-esteem and because the self-appointed leader was so domineering, the dysfunctional situation dragged on. The other Australian student, in his appraisal at the end of semester, summarised the roles played in the group as follows (The model is based on the work described in Understanding Human Communication Adler & Rodman (1982:318-320)):

Student A took on the role of Initiator/contributor, this means that he contributed many ideas and suggestions to the group. Also he became an Information Giver, this means that he offered facts that related to our task.

Student B took on two roles these were Coordinator and Orienten/summariser. The role of coordinator meant that he tried to clarify the opinions and suggestion and to integrate the information and opinions of the other group members. And orienter/summariser means that he summarised what took place, pointed out when the group headed off the track and generally tried to bring the group back to a central point.

Student C was basically a follower he went along with the group's ideas and tried to implement the decisions as best as he could.

Student D was the secretary and the procedure developer, this meant that she handled the record keeping on the groups processes and tried to facilitate the arrangements for the meetings, such as obtaining the relevant materials needed for them and handing out the pertinent papers.

Student E became the harmoniser and the gatekeeper which meant that he tried to work out the disagreements in the group and tried to encourage the quieter members to offer their opinions.
Chapter 7: In the Classroom

The roles described above are the functional roles that each member possessed but student A also had a number of dysfunctional roles that outweighed his benefits. These were:

Blocker: He interfered with the progress of the group by rejecting most of the other members ideas and trying to push forward his ideas.

Aggressor: He put everyone down in the group. Student C was constantly criticised for the way he handled his programming. Student D was put down because she made a mistake in documenting (this mistake was usually because English was her second language). Student B was put down for trying to clarify what was going on and trying to work out our direction. Student E was put down when something did not work out exactly as it should.

Dominator: Student A interrupted meetings with long narratives on how he does things and tried to flood the others with authoritative sounding jargon that nobody in the group really understood.

and Deserter: When his ideas were abandoned he deserted the project and left it up to the others to get it done while he still continues with his ideas.

Student Comment (Semester 2, 1994)

More than half way through the semester one of the students (student B) took over the role of project leader. It was at this stage that student A deserted the group. I spent a lot of time with the group, collectively and individually, attempting to resolve the conflict. While the end-product, as far as the computer software was concerned, was satisfactory, the main learning for the group was in handling a major group conflict. Although the group continued to be dysfunctional for the rest of the semester, all the students gained invaluable experience in working in a group with major personality, technical and cultural differences. Human potential was extended, not in a pleasant way, but in a realistic way, as student B learnt to assert himself, student E applied the knowledge he had gained in an organisational psychology unit to the group, student A learnt that there is more to working with other people than technical expertise and students C and D learnt that keeping quiet and working hard is not always the best policy.

In his student appraisal, Student A focussed on the technical problems. He says:
...and communication with the rest of the group ground to a halt. They could see me doing all this stuff [technical] but it was over their heads technically and I think that they did not understand what I was doing and why.

Student Comment (Semester 2, 1994)

At the other end of the scale, another group paid as much attention to group process as to software development. The group leader had completed General Systems Theory in the previous semester and he was keen to put the interpersonal-skill and group-collaboration techniques he had learnt into practice. Feed-back from students in this group included:

What I have learnt:

That a working day can if necessary, be thirty hours long!!!

I have learnt that team work is essential in such a unit, and was thankful that my team had the maturity necessary for the task at hand.

...we should work hard on building a team spirit with as much vigour as we intended to put into the project itself. The effectiveness of our efforts is proven in our still enjoying each other’s company at the end of semester.

Student Comment (Semester 2, 1994)

What I have learnt:

This unit brought with it one of the highest learning curves of my life.

Although the unit had a heavy work load and a high learning curve, it was very enjoyable (never thought I would say that). I enjoyed finally bringing together and practising everything that I have learnt in my course!

Confidence in my ability is the main thing I got out of this unit.

My group was excellent. It was agreed at the beginning of semester that any problems between group members would be brought into the open and dealt with promptly. The agreement worked well and as a result there was minimal conflict in our group.
We noticed during semester that there was conflict in other groups around us and we considered ourselves very lucky that our group held together so well.

Student Comment (Semester 2, 1994)

Personally, I have found that CP really has “brought together” all the other areas covered in this degree. I always found many of the earlier units very isolated and it was difficult to see where they fitted in, but CP brings all that study together, particularly Data Structures and Algorithms, Software Engineering, Information Systems 1, 2, and 3 and Project Management.

Student Comment (Semester 2, 1994)

What I have learnt

If you are pushing a deadline don’t take short cuts, it’s false economy. You have to eventually redo the work properly and that starts eating into your next task’s starting time - a vicious circle begins.

When a team is involved you can never be too specific in your conventions and standards. I thought we had covered absolutely everything in the coding standards but the one thing that we left out was where the code comments should begin. So when the code came in everyone had done their own thing. No problem for the EXE file but confusing to read and time-consuming to re-edit.

I learnt the real value of Quality Assurance. In the Government it is treated as a bit of a joke even though we give it a lot of lip service. I am certain that our system would not be anywhere near the quality it is if we hadn’t gone through all the textbook rigmarole.

It’s better to admit you are in trouble than to bravely soldier on. Although our Project leader told us a thousand times to tell him immediately if we needed help, it was very hard to do. You always think you will be alright if you work just a bit harder but I think that I put extra risk on the project at different stages by soldiering on.

I learnt that I could live on four hours sleep a night but I couldn’t be lived with!

I finally realised that I’m actually good at computing. I have always put my good marks down to the amount of hours I put in, however I found that I was able to produce really good software design that was defendable and hard to pick holes in.

This was an extremely valuable unit. It’s a bit like saying “that was an extremely valuable experience” after being run over by a bus, but as difficult as it was, this unit brought together
everything we had learned and more, in an environment more scary than real life. I feel that having done CP and lived, I am capable of everything.

Student Comment (Semester 2, 1994)

What have I learnt from this unit?

It is quite amazing actually, this semester all five of us had to go through such a steep learning curve. Not only in the applications we were using, but also in programming skills, communication, conflict resolution, diplomacy, organisational skills, in fact everything required to build a software package from the ground up in such a short space of time with no experience.

In our case we learnt how to handle unavailable people like our sponsor.

Student Comment (Semester 2, 1994)

These students developed a Japanese language learning package for children aged six to twelve. Their user was another academic in the Faculty of Education. Her idea of user support for the team was to give the students an initial description, leave the team to do its work and to claim the final product at the end of the semester. This was neither my, nor the students, idea of user involvement. I thought that I had covered ample user-training at the start of the semester by liaising with users on a number of occasions in order to describe both my and the students' expectations and the importance of user involvement, especially during the design phase of the project. This user felt quite overwhelmed by this group of keen, highly-motivated students. Their solution to this problem, at my suggestion, was to appoint a user-liaison person within the group as the only contact with the user. Despite this problem, this group produced a magnificent and creative piece of software that won the prize for the unit. While prizes are not regarded as an intrinsic motivator, and while I have very mixed feelings about the motivational value of having such a prize in computer practice, it is part of the unit, and it is an expectation held by students in the unit that the prize will be awarded and that it is something to aim for. Because this unit is goal-oriented, the prize is in keeping with this paradigm. I believe that it is necessary to maintain a balance between co-operative work and intrinsic motivation, and between tight
deadlines, a finished product and extrinsic motivation. Students do extend themselves in many ways in completing their very own piece of software. That is the biggest prize of all.

In groups where there were group-dynamics problems, the individual student appraisal was essential for students who needed to “let off steam” about the problems that existed, and how it affected the software produced, and who picked up the load for incompetent and slack or difficult group members. Computer Practice is a unit with such tight deadlines, and there is little room for such things to happen. There is no slack in the system. Student groups choose and design their own software packages, and while they have learnt the technical skills piecemeal in preceding units, they have never pulled them together to achieve a working software package. I cannot say whether these students go beyond the rational. They are so focussed on achieving a working software solution to present by the end of semester, that there is little room for reflection in their working and learning patterns. My aim in this unit is to relieve the pressure by providing support for the inter-group problems that arise, help with the systems analysis and design issues, help with the interface design and the technical documentation and help with mediation and conflict-resolution skills when groups cannot sort out their own problems. Members of one group spent a lot of time in my office discussing strategies to deal with the non-participative member of the group. The support I provided helped them to complete the semester. Being able to give feedback, or to release the pressure that had built up during the semester at the final formal de-briefing meeting, or informally at the party after the presentations or to me, are all vital to the completion of this very intense period of work.

In semester 2, 1994, there was more feedback about the importance of the unit in preparing students for the workforce:
Believe it or not I really enjoyed myself this semester, and have learnt a great deal about working as a team and about myself. I know I will more than pull my weight in the workforce and finally believe that I’ll enjoy working in the IT area.

Student Comment (Semester 2, 1994)

CP has given me an insight into what is expected of me in the workforce. CP was the most beneficial unit I have done at University.

Student Comment (Semester 2, 1994)

I believe that Computer Practice has been a very good chance to be more tolerant of individuals. I have also learnt to deal with people problems that occur.

Aside from the heavy work-load the unit has been quite enjoyable. I have had a chance to operate in a team, and I believe that it will help me considerably in the future.

Student Comment (Semester 2, 1994)

There were also comments from those students who were project leaders on the benefits of assuming this role.

The experience of managing a team has given me a greater appreciation of the role of manager. I learned that you cannot please everyone and that some people will be unhappy with decisions. I also learned that it is more productive to have people do tasks that they like and it proved to be more beneficial for the project than making them do things that they found boring or difficult.

Student Comment (Semester 2, 1994)

7.3 Conclusion

In all the units that I teach I extend human potential. That is common factor. In General Systems Theory I can and do explore the transition paths between states of consciousness, because there is time in the unit to do that. There is reflection time, there is time for exercises in lectures, there is time for creative visualisation, dance, chant, and rock-passing, to open up these transition paths between states of consciousness. This is not the case in Computer Practice. This is a goal-oriented project unit where lectures cease in week 4 of the semester so that students can focus
on their group project and so that they can meet the very tight deadlines. There is little
time for students to reflect on their actions, let alone explore altered states of
consciousness. The rational intellect is what is required in this unit. However, group
skills, co-operation, teamwork, conflict resolution, presentation skills, team work are
amongst the many people skills that are required and are improved during the semester.
So, if I am considering the dynamic between the rational/logical intellect and other
ways of knowing then Computer Practice is far more on the side of the rational/logical
and end-product-oriented achievement than on the side of other ways of knowing,
whilst General Systems Theory, which certainly has the theoretical and practical
logical/rational element, is far more balanced in the learning, from my point of view,
because there is time to explore the other ways of knowing and to open up transition
paths to depth learning.
Chapter 8: Outcomes of the Research

In this section I will outline the outcomes of this research project. I will discuss where and how I believe depth learning to have occurred, using the indicators described in chapter 3 and listed below in paragraph 8.1. I have shown that these have been demonstrated in both Computer Practice and General Systems Theory, even though I employed different teaching strategies in each unit, and from one semester to the next, as outlined in chapter 7. I will also discuss how I believe the dynamic between the rational/logical intellectual domain and the emotional, spiritual, intuitive, creative domain has been established across the whole of the learning spectrum, and as an evolving process. I will discuss how depth learning has occurred as we traverse transitional paths between states of consciousness, especially with respect to General Systems Theory. I will also discuss how I believe depth learning to be a complex process which is affected by many factors that draw on the whole of our being and, most importantly, the learning that occurs as a result of the collective experience within a learning environment. I will discuss how the trust, collaboration and participation within such a learning environment have been set up as essential ingredients for depth learning. I will discuss the relevance of using Checkland's core properties as a systems framework in which to describe this research project. I will look at the current situation and what I believe has been achieved with respect to my thesis proposition that depth learning in a tertiary learning environment can only ever happen as a result of the dynamic that exists between the dominant, logical/rational, intellectual paradigm and the experiential extension of the boundaries surrounding this domain. In Section 8.1 I consider how the thesis statement has been demonstrated, while in section 8.2 I apply the system's property, emergence, to the research. Table 8.2 summarises the emergence for the whole learning community showing the relationships between intrinsic motivation indicators and the systems core properties of communication, control and structure, Table 8.3 summarises emergence for individual students and shows the relationship between these same systems properties and intrinsic motivation.
indicators and Table 8.4 summarises these relationships for me as a researcher. Chapter 8 summarises the findings of chapter 7 and uses the theory described in chapter 3 to explore the outcomes of this research.

8.1 Has Depth Learning Occurred?

In chapter 3, I nominated the following characteristics of depth learning:

1. Depth learning takes place in the transition between logical/rational intellect and altered states of consciousness;
2. All learning is experiential;
3. Depth learning is felt meaning;
4. Depth learning occurs when we are motivated intrinsically, rather than extrinsically;
5. A trusting and supportive environment is necessary for depth learning to occur;
6. Intrinsic motivation is more likely to occur in a trusting and supportive environment;
7. Depth learning occurs holistically;
8. Depth learning is more likely to happen as we become more at ease with the chaos and frustration experienced in dealing with complexity;
9. Interweaving a conscious awareness of the process of learning with the curriculum being taught also deepens the learning;
10. We all have our own, unique, learning style;
11. Depth learning happens as knowledge and ideas are shared;
12. Developing listening skills is a necessary pre-requisite for depth learning; and
13. Depth learning is more likely to occur when we have autonomy over our own learning process.

Indicators that depth learning has occurred are:

1. Clear evidence of student involvement, creativity and enjoyment;
2. Many different moods, including playfulness and serious thought;
3. Students asking questions and making observations that link content to life;
4. Personal-life themes, metaphors, interest and dreams being engaged. Introducing course content at home, and play in class;
5. Signs of continuing motivation or student interest expressing itself above and beyond the dictates of the class;
6. Signs of positive collaboration;
7. Dealing appropriately with dissonance; and
8. Suggesting relevant projects of their own.

Table 8.1

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I believe that all the indicators for depth learning described above have been demonstrated in this project. These have been described in chapter 7 and illustrated with student comments.

In Table 8.1 the relationships between characteristics of depth learning and intrinsic motivation indicators are shown. This table summarises the depth learning described in chapter 7. This table shows clearly that there is a very close relationship between the thirteen characteristics I have nominated and the eight intrinsic motivation indicators.

8.1.1 Has the Dynamic Between Rational/logical Intellect and the Rest of Our Being Been Established?

I believe that this dynamic has been established, particularly in General Systems Theory where student feedback throughout the project has shown consistently that the students know that their thinking powers have extended to include non-analytical, intuitive and creative thinking patterns. Student feedback also suggests that there is a sense of empowerment as they acknowledge the validity of such thinking tools and the knowledge gained about when and how to use alternative thinking patterns and problem solutions when the usual logical/rational approach does not reach a satisfactory solution. Student feedback also suggests that either the students felt confident about applying these thinking skills to other areas in their lives, or they have already applied these tools.

8.1.2 Has Depth Learning Occurred Because of the Dynamic?

I believe that setting up an environment in which it was both acknowledged and accepted that the dynamic between logical/rational intellect and the emotional/spiritual/intuitive/creative exists, more of each student's potential was accessed. Student feedback indicates that this is the case. Comments collected from General Systems Theory on the importance and relevance of creative visualisation, stories, poetry, ritual and games, suggest that the students were aware of accessing
part of their mental functioning not previously awakened before in their tertiary, technical learning environment.

8.1.3 Has Depth Learning Occurred in the Transition Paths Between States of Consciousness?

While this is a harder claim to substantiate, I believe that this has certainly been demonstrated. Student feedback on the creative visualisation experience in General Systems Theory, especially in semester 1 1995, suggests that depth learning has taken place along the transition paths, particularly outside of the rational/logical intellect. The student comments that demonstrate this are those relating to out-of-body experiences, a sensation of floating, a general state of relaxation, a sense of overall calmness and an opening to the universe. These are all indicators that holistic depth learning has occurred, then being integrated into the logical/rational and theoretical content of the class. The fact that one student designed her own creative visualisation to demonstrate her own internal changes during the semester shows that not only was she aware of the process, but also she was able to apply these skills for herself because the learning had deepened.

8.1.4 Has Depth Learning Happened Because of Anything Else?

For most of us depth learning does not take place in isolation. It happens as we exist and learn in a community with others. Table 8.1 shows the relationship between the intrinsic motivation indicator, “signs of positive collaboration” (indicator 6), and this characteristic of depth learning (characteristic 11, “sharing”). What has made this project special and unique is that holistic depth learning has occurred in a tertiary, technical learning environment, one in which extensions beyond the rational are regarded, by many, with great suspicion. With my interest in other ways of being, knowing, thinking and learning, together with my multi-disciplinary tertiary background, I have been able to integrate my own skills and knowledge and create a trusting and supportive co-operative participative learning community. This has been discussed in chapter 7 and the relationship between this increased tolerance and the
intrinsic motivation indicators is indicated in Table 8.1. Knowledge about the process also deepened learning. Table 8.1 shows the relationship of this characteristic of depth learning to all the intrinsic motivation indicators. In a trusting and supportive environment there is more tolerance of individual learning styles. The relationship to intrinsic motivation indicators is shown in Table 8.1 and discussed in chapter 7. As I relaxed controls in each class, the students gained more autonomy over their own learning process. Table 8.1 shows that all the indicators of intrinsic motivation are present in this characteristic of depth learning. This has been demonstrated in this project by considering two extreme subjects - Computer Practice in which I created a tightly-focussed, very-directed goal-oriented environment at one end of the learning spectrum, and General Systems Theory, where the narrow, theoretical focus at the beginning of the semester opened out into a loosely-controlled democratic and co-operative process at the other. The only constant factor throughout the research project has been me as researcher and facilitator. As I have evolved both professionally and personally throughout the project, so my influence has changed and has become more dynamic. Most of the students are present for one semester and then move on. Some students have been taught by me a number of times as they have moved through their degree course.

My individualistic, and some may say idiosyncratic, methods, both in teaching and research, have contributed to making this project what it is - loosely-structured, complex, rich, dynamic and ever-changing, with a common thread of humanitarianism, empathy, enthusiasm, a love of and fascination with learning, a background of technical skills upon which to draw, and an ability to create a spirit within the classroom that binds the class together.

8.2 What Has Applying Checkland’s Core Properties told Me?

Because I am highly intuitive and enjoy living in the chaos of complexity, I found it necessary for me to impose some structure on the research. In considering the learning
community as a human activity system. I have been able to use the core properties of
communication, control, emergence and structure to provide a framework that is both
explanatory and non-restrictive. Using this framework also fits with teaching about
systems. The students and I are familiar with the terminology. Checkland’s core
properties provided a common language with which to describe the evolving learning
and research process. The learning and research process is tightly enmeshed. It has
been a challenge to tease out the research ideas separately from the classroom and the
learning within the classroom. Checkland’s core properties have helped me to do this.

8.2.1 Experiences and learning Arising from the Research

The most important core property to be considered in this section is the emergence
arising from the experiences and the learning. In this section I consider emergence on
three levels: emergence for the whole learning community; for individual students and
for me as researcher within the research environment.

8.2.2 Emergent Properties

There are three categories of emergent properties that I will consider. These are:
1. Emergence arising from within the whole learning community;
2. Emergence for individual students; and
3. The emergence that occurred for myself as the researcher within this learning
   community.

8.2.3 Emergence in the Learning Community

    And we learnt many things
    the students and I

    About structure and form
    and how learning occurs

    How we can learn from each other
    with trust and with care

    Complexly it deepened
    this learning for all

Kay Fielden  11/22/95
8.2.3.1 Trust

Emergence within the learning community covered a wide range of topics, and the most important emergent property, while it was not apparent immediately to all individual students, was the establishment of trust. A trusting environment provides an atmosphere in which individual students can improve their self-confidence and is conducive to collaboration and co-operation. Students were willing to try new approaches to learning and to the presentation and sharing of their ideas through class discussions, as well as formal presentations, because they lost their fear of being judged. Students from different cultural backgrounds, particularly those students whose first language is not English, benefited from the non-judgemental and trusting environment.

Trust is the underlying condition for meaningful depth learning (Table 8.2). When trust is established within a learning community, the depth, openness and vulnerability displayed sets up interactive communication patterns that enable students to learn in a rich, dynamic and systemic way. Besides being an important emergent property within
the learning community, establishing a trusting environment means that the system core property, communication, happens in a more complex and open manner.

8.2.3.2 Expanded awareness

Another emergent property within the learning community was the expanded awareness that allowed both process and content to be put into context both within and outside of the traditional technical educational world, as we explored new territory created by expanding boundaries. These boundaries expanded as a result of developing new ways of thinking, establishing a collaborative learning community, and from bringing the process of learning in new ways into conscious awareness, rather than leaving the process below the surface and assuming that the content would be absorbed.

Becoming more aware of the process, together with the impact of knowing about process on learning content, also highlighted the gap in traditional tertiary education, particularly that created by learning about, and applying the communication skills acquired in, a co-operative learning community. This is not encouraged and developed when learning about technology in the wider community in the faculty.

Expanded awareness meant that students made the links between course content and their every-day lives. This is an intrinsic motivation indicator (Table 8.2), relating the learning to personal life themes and positive collaboration. When we consider expanded awareness of students, from Cheekland's (1984) core-properties point of view, it improves communication and makes structure in the human activity system being studied more apparent. Indications are that controls have been relaxed as well.

8.2.3.3 Wild Butterfly Effect

For many students, the learning they achieved was far beyond what they expected during the semester. Learning was far more than the awareness of the relationship between process and content, and it happened in a flash at different stages during the
semester. For some, it occurred as they were at home working on the final examination report, while for others it happened earlier as they wrote an essay on systems and science.

The "wild butterfly effect", often the result of intuitive and creative processes being awakened, suggests to me that learning went beyond the dictates of the class. (Table 8.2) that personal life-themes are evoked in the learning process and that there were signs of positive collaboration. The system's core properties of enhanced communication patterns and a growing student awareness of structure, both within the classroom and in their wider lives, are evident when we consider the "wild butterfly effect."

8.2.3.4 Emergent Properties Concerning Learning as a Community

The learning community evolved. It took time for trust to be established, for the different ways in which we interacted to be accepted and for knowledge about process, rather than content, to be absorbed. Most students have been trained to think in a linear, step-wise fashion, and when I encourage and facilitate divergent thinking, it causes personal anxiety and chaos and, initially, a lack of trust. Human potential is extended through synergy, empowerment and a broader information and knowledge base. A key factor within the learning community in semester 1, 1995, particularly, was the establishment of participative decision-making for items of assessment. This one factor was highlighted by many as the one that made them feel empowered as individuals within the community.

In the evolving learning community, established in any one semester, there were signs of positive collaboration (Table 8.2), dealing appropriately with dissonance and increased student involvement. Systemically, communication improving through participative decision-making was a highlight of semester 1, 1995.
8.2.3.5 Limits of Traditional Technical Education

As knowledge of how important it is to accept different learning styles grew within the learning community, so, too, did the awareness that the process of learning in other courses could be improved. Also, an awareness of making the learning process explicit, and exploring learning in unconventional ways, made students within the learning community realise that the content of any technical course could be absorbed in a more enjoyable and more effective manner.

The intrinsic motivation indicators of signs of positive collaboration, dealing appropriately with dissonance and student involvement, creativity and enjoyment (Table 8.2) suggest to me that the growing awareness of the limits of traditional technical education helped to deepen the learning. Systemically, communication patterns were enriched as discussions beyond the logical/rational domain took place.

8.2.3.6 Freeing Creativity

Many of the students in the class commented on how important it was for them that their creativity, which they felt had been suppressed and restricted in other classes, was released. It is important to note that to do any form of design work, creativity must be present. To achieve elegant design with abstract systems, such as information systems - which are many levels of abstraction removed from the physical system that they represent - requires a high degree of creativity as well as well-developed technical expertise.

Besides the very obvious student involvement and enjoyment (Table 8.2), the intrinsic motivation indicator of continued motivation above and beyond the dictates of the class and the serious thought and reflection with which the students reported, suggests to me that depth learning occurred. Systemically, by relaxing controls, creativity emerged.
8.2.3.7 Life-long Learning

Many students within the learning community, acquired a set of life-long learning skills, and became aware consciously of the fact that they had acquired such skills. In the faculty as a whole, while such skills may still be acquired, the realisation that they have remains below the conscious surface and is not acknowledged.

A conscious awareness of life-long learning skills being an intrinsic motivation indicator improved and enriched both the dynamic communication in the class and the reflection on this as feed-back into the class.

8.2.3.8 Emergence of Knowledge about Process

A very pleasing emergent property for me to observe was an appreciation of collaboration amongst the students. They acknowledged how much they could learn from each other, and also pooled their knowledge in class discussions, outside of class, between themselves, in small groups and with me.

Not only does knowledge about process increase the positive collaboration within the class (an intrinsic motivation indicator, Table 8.2), but also acknowledgment of the importance of process was above and beyond the dictates of the class. Systemically, knowledge about process improved communication patterns, as students discussed how processes worked, spent time establishing effective group communication patterns and made explicit rules for interaction within the class.

8.2.3.9 A Change of Focus from Content to Process

For most students, especially the undergraduate computing students, the short-term aim each semester is to achieve a passing grade in a unit, thus enabling them to progress to the next semester and, eventually, to complete their degree. Their primary aim is not to learn for the sake of learning, but to obtain a meal ticket.
As the change of focus became explicit, so, systemically, students' inner controls shifted (Table 8.2) and, at the same time, communication became richer and more complex with a shift in focus from content to process.

8.2.3.10 Emergent Properties Concerning Other People

Within the learning community, one of the fascinating things that happened for me was observing the growing awareness of the ethical considerations required in researching and working with people and in learning with people in community. The guidelines, rules and principles made explicit and discussed during semester were absorbed and followed by those within the community to such an extent that I was reminded that I hadn’t provided the feed-back, which had been honoured in agreement, and handed down an autocratic decision.

Raising the level of awareness about ethical considerations in a collaborative learning environment meant that the level of student involvement was enhanced, qualitatively, that any discipline problems were dealt with collaboratively (Table 8.2), and that learning occurred above and beyond the dictates of the class. Systemically, control shifted from external and explicit to internal and explicit and communication patterns deepened as the awareness of the structure in which we learnt became greater.

Computing students are encouraged to work alone, to work with computers, to achieve success in their other assignments and not to "cheat" by collaborating with others in the wider technical learning world in the faculty. Emergent properties for those within the General Systems Theory learning community was in gaining skills in working with others in small groups, learning to listen, collaborating and pooling resources and learning valuable life-skills. Not only did these students learn to practise the mechanical skills of small-group interaction, but also they realised that, in using the basic-level group skills, they learnt to work creatively and effectively with others (like the creative visualisation presentation given by a student in a tutorial, ch7, p173). For
some students an emergent property was observing and learning how to get people in a large group to interact, "warmed up" and out of passive mode by asking questions. As trust is established so questions elicit responses more freely. These students saw that by asking questions in class, the group went from passive to active and so became involved in the class discussion.

8.2.3.11 Ways of Thinking

Within the learning community, I challenged students to think differently, and this became obvious and clear to them. Often, the way we think is assumed, and below the level of conscious awareness. These students were aware of the challenge. The emergence is the engagement with the challenge. In taking up the challenge to think differently, students displayed some resistance because of the initial chaotic thought processes. Not only did many students comment on the frustration and confusion, but also, on reflection, many were aware of why they were confused. There was a wide cross-section of emotional reactions to this initial chaos - dislike, enjoyment, frustration. Discussion about this mixture of emotions in systems was legitimated by the class as a valid state within a systemic-thinking domain. Students also became aware of how much freer they were in their thinking following the removal of restrictions accepting and learning about other thinking styles. There was also an awareness within the learning community that learning how to think in a non-analytical way could serve them well, and that this could also co-exist with analytical thinking. They also realised that expanding the number of ways in which they think could be applied to any subject area and that life and learning became easier and more enjoyable as their ideas opened up.

Intrinsic motivation indicators of many moods, including serious thought and student engagement in the process, are present here (Table 8.2). Systemically, as the discussion deepened to include observations of how individual thinking patterns were changing, communication in the class was enriched.
8.2.3.12 Systems

It was a surprise to some students within the learning community that they were able to see most things as a system. The emergence was the growing awareness, and applicability, of systemic thinking. Many students commented on how surprised they were that other students put forward such different world views about the same issue, problem or situation. In recognising this they, in turn, realised that other points of view are acceptable and that there are links between multiple points of view.

Developing this new skill, learning to think systemically, meant that student involvement deepened and thinking activities became more complex. This, in turn, meant that communication became more dynamic and took place at a deeper intellectual level.

8.2.3.13 Content

It was a revelation to many students just how profound an influence the traditional scientific method had had on their prior learning in a technical world. There was a growing awareness of how much science and the scientific method has affected the ways in which we think. For students researching a report in General Systems Theory on the links between science and a systems area of their choice it meant that they became aware of this profound influence. Students also became very aware of the demotivating effect of a purely-objective approach, as we explored the importance of accepting and acknowledging emotions within systems. Not only did students become aware that there were different ways of viewing others, but also there was an increased awareness of the benefits of viewing a situation from many points of view. They also realised that, as individuals, we can, and do, view the world differently as we grow, gain knowledge, experience different emotional states and react in a variety of ways to others. They also realised that not only do they have multiple view points as individuals, but also that others may have changing world views as they, in turn, learn
more, gain more knowledge and exist in differing emotional, physical, spiritual and intellectual states.

Raising the level of awareness about the influence of science and the scientific method engaged students in serious thought, reflection and interpretation of existing resource materials (Table 8.2). This raised awareness meant that, systemically, communication was enhanced, as the implications of the influence of science in many areas of their lives and their study were discussed.

Table 8.2
Emergence in the Whole Learning Community

<table>
<thead>
<tr>
<th>Emergent Property</th>
<th>Intrinsic Motivation Indicator</th>
<th>Other Systems Core Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust</td>
<td>Underlying principle</td>
<td>Communication</td>
</tr>
<tr>
<td>Expanded awareness</td>
<td>3. Linking content to life</td>
<td>Communication Relaxed controls Structure</td>
</tr>
<tr>
<td>Wild butterfly effect</td>
<td>1. Increased involvement</td>
<td>Communication Relaxed controls Structure</td>
</tr>
<tr>
<td></td>
<td>3. Linking content to life</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Personal life themes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Signs of positive collaboration</td>
<td></td>
</tr>
<tr>
<td>Learning community</td>
<td>1. Increased involvement</td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>6. Signs of positive collaboration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Dealing appropriately with dissonance</td>
<td></td>
</tr>
<tr>
<td>Limits of traditional education</td>
<td>1. Increased involvement</td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>2. Different moods</td>
<td></td>
</tr>
<tr>
<td>Freeing creativity</td>
<td>1. Increased involvement</td>
<td>Relaxed controls</td>
</tr>
<tr>
<td></td>
<td>2. Different moods</td>
<td></td>
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<tr>
<td></td>
<td>5. Learning beyond the dictates of the class</td>
<td></td>
</tr>
<tr>
<td>Life-long learning</td>
<td>3. Linking content to life</td>
<td>Communication</td>
</tr>
<tr>
<td>Knowledge about process</td>
<td>5. Learning beyond the dictates of the class</td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>6. Signs of positive collaboration</td>
<td></td>
</tr>
<tr>
<td>Change of focus from content to process</td>
<td>1. Increased involvement</td>
<td>Communication Structure</td>
</tr>
<tr>
<td></td>
<td>3. Linking content to life</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Learning beyond the dictates of the class</td>
<td></td>
</tr>
<tr>
<td>Ethical considerations</td>
<td>1. Increased involvement</td>
<td>Control Communication Structure</td>
</tr>
<tr>
<td></td>
<td>2. Different moods</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Learning beyond the dictates of the class</td>
<td></td>
</tr>
</tbody>
</table>
8.2.4 Emergence for Individual Students

In this section those emergent properties identified by individual students are listed. The depth to which some students identified how the change in teaching style affected their learning was confirming, touching and surprising to me.

8.2.4.1 Personalising the Learning Process Makes it Real

Making myself vulnerable provided an appropriate role-model for the students. This was acknowledged by at least one student as an encouragement for her to convey information in a like manner in both class discussions and in the individual presentations in tutorial. Also, the stories, which personalised the learning process, helped to break down learning barriers, providing real-life examples to which the concepts being taught could be linked. Personalising the learning process and making it real also encouraged a growing awareness of her own thinking patterns for at least one student.

Intrinsic motivation indicators of using personal life-themes, linking content to life, signs of positive collaboration and evidence of many different moods in class suggest that personalising the learning process encourages depth learning (Table 8.3).
Systemically, the level of vulnerability achieved meant that communication was heartfelt as well as intellectual. Breaking down the barriers encouraged greater openness.

8.2.4.2 A Shift of Focus from Passive to Active

An emergent property identified by one student was the importance given to the shift in focus from passive listening to active, questioning, dynamic involvement in the learning process. The focus on learning shifted from a basic level of participation - in other words, what was required by the student to pass the unit - to one that was complex and highly dynamic. This change in focus, and the observation of the complexity and richness of the interactions within the learning community which deepened the learning, meant that this student identified a move from individual skill-acquisition to an awareness of how these interactive and dynamic skills can be shared.

As the focus shifted from passive to active, students engaged more in the learning process (Table 8.3), showed signs of positive collaboration and experienced many different moods. Systemically, control of the learning process became internal and explicit, encouraging more students to regain control of their own learning. Also, as the focus shifted, and an open acknowledgment of the importance of participating actively took place, communication became far more interactive and dynamic and happened in a qualitatively-different manner.

8.2.4.3 Emergence for Individual Students About Self

Most students acknowledged that they had changed many and varied ways during the process. For some, the changes were well-identified and in sharp focus, while for others there was a less-defined impression that, somehow, they were different.

With the growing, and the varied and individual knowledge about self within the learning community for individual students, came more engagement in serious thought about the importance of knowing self, the experience of different moods in a learning community and the ability to link class content to life (Table 8.3). Systemically,
communication with others was improved as self-knowledge and awareness of how each individual’s changing mind-set affected the learning within the community, grew. Control became internalised as students became more aware of who they were.

8.2.4.4 The Acceptance of New Ways of Learning

At least one student identified as important not only the fact that he had been exposed to new ways of learning, but also that he had accepted these different ways of learning as an evolving process during the semester.

Intrinsic motivation indicators of increased student involvement, an immersion in many different moods (including play, creative visualisation, dance, chant, quiet inner listening, and reflection as well as serious thought) and motivation beyond the dictates of the class suggest that acceptance of those new ways deepened the learning. Systemically, communication was enhanced qualitatively as these other ways of learning were acknowledged openly. Accompanying this acceptance was a shift to internalised, rather than externalised, controls over the learning process.

8.2.4.5 A Growing Awareness of Own Biases and Weaknesses

There was an acknowledgment that there was a growing awareness of individual biases and weaknesses. This displays a level of vulnerability and trust not usually experienced in the academic environment in which I work. One student was heartened by the degree of vulnerability within the class in General Systems Theory in Semester 1, 1995, noting that it is the heart connections we make with others, and with the concepts being taught, that deepen the learning process.

Intrinsic motivation indicators of being able to think and communicate about ideas that display such a level of vulnerability are apparent here (Table 8.3). Systemically, control became explicit and internal, thus empowering individual students. Communication was enriched by the level of vulnerability displayed in discussing individual biases and weaknesses.
8.2.4.6 Improved Listening Skills

Listening skills improve not only because of the explicit listening exercises, but also because of the level of interaction in the class. This was acknowledged by at least one student as being important in improving his ability to learn. There was also a growing awareness of the diverse roles within the mind, and of how these influence the ways in which we learn. There was an awareness of the inner critic, and of how this inhibits and closes the mind to accepting and receiving new information; of the judge who delivers black and white verdicts on what is and is not important; and of the fear that paralyses the ability to learn by immobilising any attempt to try something new - a new thinking style, for example.

Systemically, communication improved as listening skills were developed during each semester. Intrinsic motivation indicators of positive collaboration and a display of different moods, including the ability to reflect on the importance of developing listening skills, show that depth learning is enhanced by improving listening skills (Table 8.3).

8.2.4.7 Listening to Others as Well as Self

Having become aware of the importance of inner listening - the listening to the many voices within and the roles that these voices play in learning - the awareness shifted to an outer focus for a few students. They realised that it was equally important to listen to others, and to acknowledge that others, also, have their own dynamic and complex processes going on within their minds.

An awareness of the shift in focus from listening to other students, as well as listening to own inner dialogue, systemically improves, enhances and enriches communication patterns. As the controls for each student move towards being internal and explicit, and as listening skills improve, so smaller proportions of an individual's reaction colour the communication. Intrinsic motivation indicators of positive collaboration, greater
student involvement, linking class content with life and motivation beyond the dictates of the class are evident when this emergent property is considered (Table 8.3).

8.2.4.8 Improved Observational Skills

A few students identified an improvement in their ability to notice what was going on around them. This improvement in observational skills was also noted about self as well as about others.

Intrinsic motivation indicators of increased student involvement, signs of positive collaboration and motivation above and beyond the dictates of the class were evident with this emergent property (Table 8.3). Systemically, communication patterns were enhanced as students learnt to observe and discuss openly more of the world around them.

8.2.4.9 Growing Awareness of These Skills

An individual observation was that the collection of skills acquired during the semester was universally applicable. This student felt strongly that this unit (General Systems Theory) should be compulsory for all students, rather than being elective. He believed that everyone would benefit from being exposed to learning in this way.

With the growing awareness of the universal applicability of these skills comes the intrinsic motivation indicators of greater student involvement, the ability to link class content to life, motivation above and beyond the dictates of the class and signs of positive collaboration (Table 8.3). Systemically, communication took place at a deeper level, with a growing awareness and open acknowledgment of the acquisition of life-long skills.

8.2.4.10 Personal Growth

For some students, the awareness of the changes and growth that they had experienced was a little more diffuse. They knew that changes had taken place for them, but they
were unable to identify what these changes were. As my skills in teaching improved, and became more varied, more subtle and more in tune with the atmosphere in the class, so the level of awareness with individual students became more astute. It is important to remember that these students are not exposed to learning in this way in the rest of their academic course, nor are they the sort of people who normally engage in personal growth activity outside of University.

Reflection on the extent of personal growth achieved during one semester goes far beyond the dictates of the class in a tertiary technical environment (Table 8.3). Students show a high degree of vulnerability in reflecting on their own personal growth in class discussion, in creative writing, in individual student evaluation and examination papers. Systemically, controls became internal, empowering and explicit, while communication happened at a heart-felt and soul level.

8.2.4.11 Realising that Leading a Carefully-planned Life Minimises Risks

As a risk-taker in my own life, it was an eye-opener for me to realise that there were others who were not. One student identified the fact that he minimised risk-taking in his carefully-planned life in General Systems Theory in semester 1, 1995 thus limiting his opportunity to learn.

This reflection on risk-taking suggests to me that vulnerability and openness were displayed. This student examined his own life-behaviour patterns, relating content to life, and showed motivation above and beyond the dictates of the class (Table 8..3). Systemically, the fact that he could make such a reflection in public deepened the communication as he relaxed his internal controls.

8.2.4.12 Trust in the Learning Environment

One student noted that, although trust was important in learning, just as important was the setting up of a trusting environment which would allow intuition to flow and to be respected. This trusting environment also meant that the fear associated with offering
suggestions was lost. At no stage did this student feel threatened or belittled, and this increased her confidence and willingness to take part in the class discussions.

This recorded realisation of the link between trust and intuition displayed a growing awareness of the importance of this link, indicated a greater degree of student involvement and showed signs of positive collaboration (Table 8.3). Systemically, it also suggested a releasing of both internal and external controls as communication took place at a deeper level.

8.2.4.13 Re-sensitisation to the Potential of Others

An emergent property for one student, who worked in the public service, and who had become demotivated by the slowness and ineptitude displayed in his department, was the way in which he had become re-sensitised to the enormous energy and potential of others. Not only did he become enthusiastic and motivated, but also he is now active in motivating others at work by using the skills acquired during the course.

This student displayed intrinsic motivation indicators above and beyond the dictates of the class, an ability to link his working life to class content, and a higher degree of involvement (Table 8.3). Systemically, in doing so, the communication he was empowered to engage in at work changed the quality of his working environment.

8.2.4.14 Reflection

A number of students acknowledged that they had changed the way in which they reacted to stimuli in their world. Instead of reacting immediately, and often negatively, to things that happened to them, they reflected on the situation, thinking through and discussing with others the way, or ways, in which to proceed. Not only did reflection take place, but also there was an acknowledgment and acceptance of the importance of reflection.
Developing reflective skills deepened the learning process by empowering students with knowledge about their own internal processes (Table 8.3). Student involvement was a function of as reflection on process as well as knowledge about content. The fact that students could engage in serious discussion on the advantages of reflection deepened the learning process. Systemically, communication was enhanced as individual internal controls came into conscious awareness.

8.2.4.15 Applying Systems Concepts

In General Systems Theory, learning about systems ideas and systems thinking provided a number of students with a different framework within which to view their world. One student recognised this framework as an antidote to a feeling of helplessness at work. Instead of becoming despondent about not being able to achieve action when it seemed to him that it was required, he realised that he had another set of tools to use for motivating others and for achieving action.

Being equipped students with another set of thinking skills meant that the students could view the world differently, could apply systems concepts to life-long learning, and could take the ideas beyond the dictates of the class, giving them another tool with which to engage in serious thought (Table 8.3). Systemically, communication changed qualitatively, as this new set of skills was assimilated.

8.2.4.16 Researching

A few students recognised that they had acquired different research skills during the semester. One student noted that she had developed the ability to question the resource material. Her previous pattern had been to accept others' work as a precedent rather than to question the ideas and look at how and why they fitted with the knowledge being gained. Other students acknowledged that learning about other ways of researching expanded their awareness the aims of research and it gave them the
ability to accept that these other ways are legitimate and that a change of focus from traditional objective research was valid.

As these students reflected on their wider research skills, they demonstrated that depth learning had occurred by engaging in serious thought and by being prepared to immerse themselves more in the process. Systemically, these students gained far more control over their own researching and learning abilities.

### 8.2.4.17 Problems

One student realised that problems in the real world are linked directly to our own perception of how we view a problem. Another student acknowledged that solving problems systemically was acceptable and effective, while yet another student noted that there are many ways to think about a problem.

These realisations suggest to me that these students were prepared to reflect on problem-solving, both in the classroom and in the rest of their lives, thereby examining the structure of their individual worlds (Table 8.3).

### 8.2.4.18 Presentations

One student noted how much was learnt from others who were giving presentations. Presentations were acknowledged as a way in which each and every student could be an active part of the learning community and could share his knowledge and skills. More than one student overcame his fear of giving a presentation. The fear dissipated because the atmosphere was friendly and supportive and the student felt that the rest of the class was interested.

Intrinsic motivation indicators of enjoyment, letting go of fear, learning from others and trusting the learning environment are apparent here. Systemically, these students
took back control of their presentations by overcoming their fear and communication was enhanced both to the presenter and to the rest of the class.

### Table 8.3

<table>
<thead>
<tr>
<th>Emergent Property</th>
<th>Intrinsic Motivation Indicator</th>
<th>Other Systems Core Property</th>
</tr>
</thead>
</table>
| Personalising the learning process         | 2. Different moods  
3. Linking content to life  
4. Personal life themes  
6. Signs of positive collaboration | Control  
Communication  
Structure                                                      |
| Shift of focus from passive to active      | 2. Different moods  
3. Linking content to life  
6. Signs of positive collaboration                                                       | Communication                                                    |
| Knowledge about self                       | 1. Increased involvement  
2. Different moods  
3. Linking content to life | Communication  
Control (internal)                                                      |
| Acceptance of new ways of learning        | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Communication  
Control (internal)                                                      |
| Growing awareness of own biases and weaknesses | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Communication                                                      |
| Improved listening skills                 | 1. Increased involvement  
2. Different moods  
6. Signs of positive collaboration | Communication                                                      |
| Listening to others as well as self        | 1. Increased involvement  
3. Linking content to life  
5. Learning beyond the dictates of the class  
6. Signs of positive collaboration | Communication                                                      |
| Improved observational skills              | 1. Increased involvement  
5. Learning beyond the dictates of the class  
6. Signs of positive collaboration | Communication                                                      |
| Growing awareness of skills               | 1. Increased involvement  
3. Linking content to life  
5. Learning beyond the dictates of the class | Communication                                                      |
| Personal growth                            | 3. Linking content to life  
5. Learning beyond the dictates of the class  
6. Signs of positive collaboration | Communication  
Control (internal)                                                      |
| Minimising risks                           | 1. Increased involvement  
3. Linking content to life  
5. Learning beyond the dictates of the class | Communication  
Control (relaxing)                                                      |
| Trust in the environment                   | 1. Increased involvement  
6. Signs of positive collaboration | Communication  
Control (relaxing)                                                      |
<p>| Re-sensitisation to                        | 1. Increased involvement                                                       | Communication                                                      |</p>
<table>
<thead>
<tr>
<th>Potential of others</th>
<th>3. Linking content to life</th>
<th>5. Learning beyond the dictates of the class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflection</td>
<td>1. Increased involvement</td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>5. Learning beyond the dictates of the class</td>
<td>Control (internal)</td>
</tr>
<tr>
<td>Applying systems concepts</td>
<td>1. Increased involvement</td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>2. Different moods</td>
<td></td>
</tr>
<tr>
<td>Researching</td>
<td>1. Increased involvement</td>
<td>Control (internal)</td>
</tr>
<tr>
<td></td>
<td>2. Different moods</td>
<td>Structure</td>
</tr>
<tr>
<td>Problems</td>
<td>1. Increased involvement</td>
<td>Structure</td>
</tr>
<tr>
<td></td>
<td>2. Different moods</td>
<td></td>
</tr>
<tr>
<td>Presentations</td>
<td>1. Increased involvement</td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>5. Learning beyond the dictates of the class</td>
<td>Control (internal)</td>
</tr>
<tr>
<td></td>
<td>6. Signs of positive collaboration</td>
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</tbody>
</table>

8.2.5 Emergence from the Research Process for Me.

It was not until I had to re-work so much of what I had done that the importance and significance of the way in which I teach became apparent. Because I operate intuitively, much of the time, within a tightly-constrained and highly-structured environment, my awareness of why what I do is effective was not conscious. I know that certain practices are effective. I know how they are effective, but I was not conscious of why. This re-examination of my teaching and researching practice has brought the reasons for the effectiveness to the surface. I will consider emergent properties in the research process arising from my teaching practices from three perspectives: structure, skill-development, and realisations and insights.

8.2.5.1 Structure

It became apparent to me that, as my level of trust in my own practices increased, I was able to relax constraints with the class and so allow empowerment for the students through a greater degree of ownership of the process. Feedback from students, stating that they felt empowered, supported my belief that this was, indeed, happening. At the same time, I never allowed the process to be out of control. While there were chaotic processes - both in class and with individual student thought-patterns, as I exposed them to the subtle and complex ideas, as well as presenting these ideas in a...
multiplicity of ways - I was always in control of the process. This was acknowledged by at least one student, who noted that the class accepted my direction, even as the controls were relaxed.

Systemically, I set up a more-flexible structure, progressively relaxing controls, allowing communication to flow more freely, more dynamically and at many more levels. Intrinsic motivation indicators for me were “a greater degree of involvement”, “the ability to be at ease with facilitating many more moods and experiences in the classroom”, as well as “allowing myself to be vulnerable” (Table 8.4).

8.2.5.2 Skill Development

For me, one of the most important developments in semester 1, 1995, had been the quest to find better ways to allow emergence to take place within the learning community. I have reflected on each and every activity in class. That semester, for the first time, I realised that re-visiting the core properties of systems, and relating them to class activities as a dynamic exercise, provided an invaluable lesson in reflection and feedback and in making systems concepts come alive. I also realised that setting a take-home examination on these concepts, related to class activities, gave me invaluable data to plan for future semesters, as well as allowing me to see how each and every student had responded to a different way of learning.

In improving my own skill level in facilitating depth learning, I have gained more internal control for myself, as well as having improved the way in which I communicate with the class. In many ways, what I have achieved goes beyond the boundaries of traditional teaching methods in a tertiary technical learning environment (Table 8.4).

8.2.5.3 Fine-tuning Those Skills Required for Depth-Learning to Take Place in Altered Time

I have discovered that engaging in exercises that take us into altered time and space does not pre-dispose me towards wanting to analyse the outcomes. The "other" space
leaves me mellow, relaxed, open, often-drifting and in a pleasurable state. It takes considerable effort to move from this space back into an analytical frame of mind. In taking the effort, and in developing the skills to make this shift, I have realised that it is in this transition from mellowness to analysis that much learning, insight and creative thought takes place. The ideas return in a different sequence, sometimes with different values placed upon them, and sometimes in juxtaposition with thoughts that have never been considered together before. As the critical mind "clicks in" - re-organising, re-shaping and considering - powerful and subtle thoughts emerge.

In fine-tuning these exercises I have been able to explore many more moods and states of consciousness both for myself and for the students. I have gone far beyond the dictates of the content of the class in order to facilitate depth learning. This has happened in a positive and collaborative environment (Table 8.4). Systemically, for me, control has become internal and explicit and there has been a qualitative shift in communication patterns.

8.2.5.4 Reaching More Students as my Skills Improve

As my skills have improved, I have reached more students. When, in 1992, I started collecting data for this project, there was a lot of confusion and lack of understanding, especially amongst the ESL students. This year, 1995, I have received feedback from ESL students which suggests that they have grasped systems concepts, have improved their presentation skills and have lost their fear of speaking out in class. The other group of students which has benefited from my improving skills is that group, usually of mature-age, with a military background. These students have even more exposure to functional, sequential training than young undergraduate students, and the barriers to more flexible learning styles are more firmly entrenched. These students have benefited greatly from the methods I use, even though there is a greater resistance, initially.
In being able to reach more students as my skills have improved. I recognise that my own intrinsic motivation indicators have been ‘a greater degree of involvement, enjoyment and creativity’, ‘the ability to access different moods’ and ‘learning that has gone beyond the dictates of the class’ (Table 8.4). Systemically, I also realise that, in doing this, I have pushed out the boundaries of the existing academic structure and have changed communication patterns qualitatively.

8.2.5.5 The Improving Ability to Fine-tune Exercises, Timing and Placement of Exercises to Content of the Class

When I started to use warm-up exercises in class, I planned what I was going to do. I had a set of exercises, which sometimes, fitted the content. We always did the exercise at the start of the lecture, then continued with the content of the class. Now the class structure is much more flexible. Sometimes the exercise follows an incident that occurs during the class, sometimes the exercise is planned and agreed to prior to a class and sometimes the exercise is at the suggestion of a student. Also, I have developed the ability to know, intuitively, and from prior experience, which exercises are effective.

For me, this flexibility has meant that I have been able to explore the learning process more dynamically, going beyond existing boundaries in a traditional tertiary technical learning environment, and enhancing communication patterns. I have changed, also, the structure within a unit, even within each class, for the students, internally, as well as for myself.

8.2.5.6 Realisations

In this section I will list the insights that I have experienced as I researched, studied, learnt and worked with my classes.

1. There are many paths leading to altered space and time and to depth learning. I have used a variety of exercises appropriate for shifting states of consciousness. I
have not taught people how to meditate, or used any of the mystical techniques. I have used methods commonly available, which are also non-threatening. Creative visualisation, story-telling, poetry-reading, inner listening, quiet sitting and chanting are all non-threatening and enjoyable, and provided a means of going into an altered state of consciousness. I believe that it is in the transition between states of consciousness that the mental re-organisation required for depth learning occurs. This realisation suggests to me that, because I have been prepared to go beyond the normal boundaries in a tertiary technical learning environment, I have been able to explore and facilitate depth learning in a number of different ways. As I have done this systematically, I have improved my internal control skills. By making these skills explicit to the class I have enabled others to explore their own transition paths for depth learning, for personal development, for intellectual skill-development and for interpersonal skills:

2. Completing the feedback loop on student evaluations in class is essential for learning the concept of feedback. In previous semesters, after completing student evaluations, these were studied and evaluated, and the results used to change teaching practices for the following semester. Last semester (1. 1995), I collected the evaluations a week earlier, analysed the results and presented the findings to the class as a whole. Student comment on this in class was that they, in turn, realised, for the first time, the importance of feedback. It also completed the process for this group of students, as well as providing invaluable data for the following semester. The realisation of the importance of completing this feedback loop came late in the research project, because I have reflected on the importance of feedback, and because I have facilitated the development of feedback skills in the students in class. Systemically, the structure of the class was changed to enhance and complete the communication for the semester (Table 8.4);
3. The increase in my self-confidence and self-esteem has meant that the learning process for the students has been more effective. The evolving process for me has been my increasing self-confidence, as I see how well students learn and how well they retain and use the skills gained in my classes. I have also improved my confidence and esteem by engaging in personal-growth work. This, in turn, has changed me as a person and as a teacher. As I become clearer about the sort of person I am, my personal baggage becomes lighter, and the learning for the whole class becomes clearer, sharper, more focussed, more vulnerable and more effective. From a personal depth-learning point of view, I have been motivated beyond the normal dictates of the class (Table 8.4). This gain in self-confidence and self-esteem has meant that my internal control over the learning process - for myself as well as for the students - has improved and communication with others is not tainted by personal “baggage”;

4. This increase in self-confidence has meant that I have lost my self-consciousness about using different teaching methods. To start with, I felt that I was challenging authority, by teaching in a different manner, and there was a degree of self-consciousness there, which, on reflection, I think interfered with the learning process. The focus turned to the exercise itself, rather than to the concept that the exercise was demonstrating. Because I lost this self-consciousness, the mechanics of the exercise faded into the background, and the concepts involved became the focus. As I evolved in my ability to facilitate depth learning, and as my self-consciousness disappeared, my role as facilitator became more and more transparent. This was an empowering process for me, involving the necessary pre-conditions of intuition, reflection, serious thought and the confidence to go beyond the normal boundaries in a tertiary technical learning environment (Table 8.4). Systemically, it seems that the more transparent the facilitator’s role, the more effective the learning for others;
5. This also means that I have been able to relax controls in the classroom and I have been able to use co-operative decision making more effectively. Along with my increased level of confidence, I have been able to trust myself and trust the class more. As a result I have been able to use techniques such as co-operative decision-making which, in turn, has been a major feature in promoting trust within the learning community. Trust, the precursor for depth learning, was necessary for me personally as well as for my role as facilitator in establishing a co-operative learning environment. Systemically, as I relaxed controls, the community, as a whole, operated more effectively as the decision-making was shared:

6. There has been a marked reduction in the number of discipline problems. Cheating has disappeared. I believe that the decrease in discipline problems was a result of being able to build a trusting, co-operative, participative learning community. Within such a community, it is everybody's input which is important; everybody is empowered by their individual contribution and, collectively, the whole community gains from the level of co-operation and sharing. In such a community, rules and guidelines for social interaction are discussed openly, and infringements to these self-established rules are considered by the whole community. This is the environment in which learning takes place and, as such, there was no cheating and there were no discipline problems. As communication about discipline problems became more open, so the problems disappeared. Control in such a system is self-regulated and internal, for personal integrity and honesty are respected and explicit. In such a learning community, student involvement evolved into active participative decision-making. My motivation was driven by the success within the system and a deep, innate knowledge that what I was doing was right, intuitively.

7. Removing myself from the immediacy of the classroom had meant that I could view the data in a more detached manner. I have been able to see emerge the
order and pattern of what I do. Also, it is only on re-visiting the data that I have been able to look critically at the collection of stories, evaluations and appraisals. The stories, when read immediately after a class, evoke, for me, the classroom setting, the feelings, the people and the emotive issues. As I re-visit them, I have been able to detach myself from the emotive issues and see, in the emerging patterns, the value that support the concepts learnt and the teaching methods employed. It became necessary for me to immerse myself in the process, to link content of the class to life themes, to consider personal life-themes, and to go beyond the dictates of the class (Table 8.4). Systemically, I gained in internal controls and I was able to place external structure onto the research:

8. Gaining confidence has also meant that I have lost some of the aggression and anger about the system in which I work. My attitude and emotional state had made it difficult for me to practise the work that my passion dictates. I felt as if there have been opposing forces at work. On one hand, I feel passion and enthusiasm for teaching, deepening the learning for the students and, on the other hand, the anger I feel about the lack of support and the lack of enthusiasm and the isolation within the faculty. These are opposing forces, and the aggression interferes with the learning process. As I have gained confidence, I feel the anger dissipating. I accept that the teaching methods employed in the rest of the faculty are different. From a systemic point of view, this change in attitude was essential for my facilitation to become effective. As I dealt with my personal problems, I communicated less anger and aggression. The opposing forces dissipated. I achieved this through personal development, extensive observation and reflection of myself in the process, and by exploring the link between the learning in both my personal and my professional lives. Accompanying this attitude change was a gain in internal control as a facilitator. This change also implies an internal structural change for me:
9. In the past I have experienced difficulty getting into analytical mode. There is a fine balance between critical analysis and creativity. Being creative gives me great satisfaction. I can reach people's hearts where I believe, we take in life's lessons as we by-pass the critical mind and, at the same time, the critical mind is required for balance to be achieved. When I realise that it is the transition between the spaces where creativity emerges and analytical thinking occurs that new thoughts occur and depth learning happens, then I am moving beyond the distress I feel, when I am unable to access my own creativity. It required a degree of self-discipline in order to make this internal change. This implies that both internal control and structural changes that were required for the learning process to evolve (Table 8.4). While I was happiest out of "analytical" mode, it was necessary for me to explore this way of thinking to achieve internal balance:

10. Ordering the data had meant that the concentration of information was then focussed, enabling new insights to emerge. It has also meant that patterns emerging over time have been displayed. Ordering and analysing the data was not possible while I was not prepared to go into "analytical" mode. The learning deepened for me as I made the shift and sorted the data so that the insights could occur. Systemically, I believe that this is a more holistic way in which to achieve internal balance in the learning process:

11. Because I have been successful in raising the level of awareness about how learning takes place, some students have reported that they are intolerant of normal lecture styles. They have also learnt that they can take action to improve their own ability to learn in such situations. They do not have to revert to passive note-takers. While raising the level of awareness from passive to active is an advantage in a co-operative learning community, it does cause an imbalance within the wider technical learning community. Looking at ways of bridging this gap is a possible extension of this research project; and
12. Most of the emergence for me has been about concerned with process. This is appropriate in process-oriented research.

### Table 8.4

<table>
<thead>
<tr>
<th>Emergent Property</th>
<th>Intrinsic Motivation Indicator</th>
<th>Other Systems Core Property</th>
</tr>
</thead>
</table>
| Structure                                  | 1. Increased involvement  
2. Different moods                                 | Relaxed controls                      |
| Skill development                          | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Communication  
Control (internal)                                |
| Fine-tuning skill development in altered states of consciousness | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Communication  
Control (internal)                                |
| Reaching more students                     | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class  
6. Signs of positive collaboration | Communication                        |
| Matching content to process                | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class  
6. Signs of positive collaboration | Communication  
Structure                                   |
| Relaxing classroom controls                | 1. Increased involvement  
2. Different moods  
6. Signs of positive collaboration  
7. Dealing with dissonance appropriately   | Communication  
Structure  
Relaxed controls                                |
| Decrease in discipline problems            | 1. Increased involvement  
5. Learning beyond the dictates of the class  
6. Signs of positive collaboration            | Communication  
Control (explicit)                           |
| Retrospective interpretation of data       | 1. Increased involvement  
3. Linking content to life  
4. Personal life themes  
5. Learning beyond the dictates of the class  
6. Signs of positive collaboration | Control (internal)  
Structure                                      |
| Awareness of loss of anger and aggression  | 1. Increased involvement  
2. Different moods  
3. Linking content to life  
4. Personal life themes  
5. Learning beyond the dictates of the class | Control (internal)  
Structure                                      |
| Getting into “analytical” mode             | 1. Increased involvement  
2. Different moods  
3. Linking content to life  
4. Personal life themes  
5. Learning beyond the dictates of the class | Control (internal)  
Communication  
Structure                                      |
### Chapter 8: Outcomes of the Research

<table>
<thead>
<tr>
<th>Scene Description</th>
<th>Outcomes</th>
<th>Control Model</th>
</tr>
</thead>
</table>
| Ordering the data                       | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Control (explicit) Structure   |
| Raising student awareness              | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Communication                  |
| Moving on the transition paths         | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Control (internal) Communication  
Structure (meta-level)                  |
| Completing the feedback loop           | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Control Structure               |
| Increased self-confidence and self-esteem | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Control Communication           |
| Loss of self-consciousness             | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Control (internal) Communication |
| Using different teaching methods       | 1. Increased involvement  
2. Different moods  
5. Learning beyond the dictates of the class | Control Communication           |

#### 8.3 Conclusion

In this section, I have considered the outcomes of the research. I have described how I believe that depth learning has occurred by using the indicators of intrinsic motivation, gained from student feedback. I have considered whether depth learning has taken place on the transition paths between states of consciousness. I have also described how a systems framework has helped to provide a structure for a loosely-connected research project. I have considered the emergence that has occurred within the learning community for the students individually and for me as a researcher.
Chapter 9: Conclusion

In this thesis I have explored a number of paths between the logical/rational intellect and other ways of knowing and learning that both extend human potential and deepen the learning process. For me, this evolving research process has lead to a form of participative inquiry in a co-operative learning community within a tertiary technical world. I have explored the ways in which the learning process have been extended beyond the rational, paying attention to developing community in an isolating world by encouraging group work and social interaction. I have relied heavily on experiential learning, using projects contributed from the wider community for Computer Practice, using in-class exercises in General Systems Theory that link holistic experience with intellectual processes, setting the scene to develop and integrate the use of intuition and creativity with rational thought. I have considered the importance of acknowledging self in the process; self in the learning process; self in relation to others; self in isolation and self as a spiritual being. I have considered the role I provide for students and have taken measures (like extensive self-development) to portray the sort of person who has extended own human potential and learning so that the students have a guide who is more than an academic and who conveys course content. I have described how depth learning occurs in the classroom and I have considered contributions from the literature and the impact of the literature on my work. Also, I have provided student feedback that supports that depth learning has occurred. In considering the proposition that depth learning happens in the dynamic between rational/logical intellect and other states of consciousness, I have described non-drug-induced altered states of consciousness, transition paths between states of consciousness, energy flow, exploration of these paths and how the transition paths are accessed. As we go beyond the rational it is necessary to consider the importance of intuition and creativity and the relationship to rationality. I have explored these concepts and, I have shown how we can set up our own internal co-operative learning community. I have used a systems framework to establish a flexible and dynamic
meta-structure in which to position this research. I believe that the most important outcomes of the research are what has emerged that is beyond rational, quantifiable analysis. I have considered the research arena as a human activity system, systemically and holistically, and as a self-regulating system with multiple realities co-existing in a trusting, vulnerable, open, co-operative, learning community. In considering the research methodology for inquiring into depth learning I have looked at the characteristics of qualitative research in general and participative inquiry in particular. I have established my research as working qualitatively and participatively with small groups, the composition of which changes with each semester. I have considered the power imbalance within the classroom, the importance of providing an appropriate role-model, the importance of becoming a reflective researcher and learner and I have considered the changing ethical issues in being involved subjectively in the research process. I have explored what interpretation means to me and applied interpretive methods to the data throughout the thesis. I have also considered and demonstrated the importance of insightful process both as a research and a learning tool. I must stress again that the research, from the students point of view was never at odds with the learning outcomes of the unit and, indeed, I believe has enhanced the learning process. I have used creative writing as an expressive and interpretative tool, as a means of demonstrating the links between insight and rationality, as a means of accessing an emotional and spiritual self and as a powerful teaching tool. I have encouraged students to access their own creative abilities through writing and examples of this work have been included. The data collection was unobtrusive and integrative, and at all times, in alignment with the learning outcomes for the unit in question. I have described a number of ways including dance, chant, creative visualisation, play, lateral thinking, brain storming, interactive class session, quiet times and active listening in which the learning has deepened. I have described my research outcomes, as well as the emergent properties for the students both individually and in community.
Chapter 9: Conclusion

A major finding of this research has been the relationship between depth learning and the transition paths between different states of consciousness. In chapter 5 I outlined the principles underlying depth learning, flow of energy and altered states of consciousness, whilst in chapter 7 I described how depth learning took place in the classroom. Chapter 8 summarised the outcomes of the research emerging during the process on three different levels: for the whole learning community, for individual students and for myself as researcher. Also, the relationships between intrinsic motivation indicators and the characteristics of depth learning were considered.

Stepping out now
with confident stride

After silently sitting
for soul to inform

Chaos subsiding
ordered patterns appearing

Now knowing the way
if just for today

Looking again
at how we learn

Stepping out now
with confident stride

Fielden (1995)

My vision for the future is to continue fine-tuning the balance between the logical/rational mind and the many other ways of knowing. I would like to walk into a classroom that accepts, wholeheartedly, the learning experiences in which we engage. Having gained general acceptance for a diversity of learning exercises, I believe that I could progress further within the time constraints of one semester, because less time would be required to set the scene for depth learning to occur. While the time spent in
establishing and maintaining trust is essential. I believe that more progress could be made, once the acceptance is there. There are a number of clear directions to pursue.

With the expected influx of students from many other countries into Australian universities, it seems to me that it will be important to research any cultural differences in exploring transition paths between states of consciousness where depth learning occurs. The fact that I have achieved success with students from different cultures in understanding the complexities of General Systems Theory in semester 1, 1995, suggests that it would be a valuable field of study. The second area I would like to explore is integrating rationality and other ways of knowing as transparently as possible. I believe that, as I have lost my self-consciousness about employing diverse methods in the classroom, so the strangeness of the tools used disappears. I think also that I can build on the work-place myth that has evolved over time - that different things take place in my classes. Once the attention is diverted from the tool - the chant, the dialogue, the dance or the poetry - as a strange device, to something that is commonplace and accepted, so the transparency is achieved. While I realise that this is an evolutionary process, my skills are developing at the same time. The third area I would like to spend some time with is in using non-drug-induced altered states of consciousness in a number of different scenarios, as a learning device. I would like to gather more data via story writing as people traverse the paths between states of consciousness. I can envision doing this with guided visualisations, story-telling sessions, sacred dance, and chant. I am sure that there are many other ways in which this can be achieved as well. I would like to link the activities even more closely to the intellectual content of the class in as seamless a fashion as possible. I trust my intuition to inform me about the best practice for any given situation. I believe that as the practices become common-place in a functional world, so the learning will deepen more rapidly. As I continue on my personal path of facilitating depth learning experientially, I am open to the unexpected, the emergence and the opportunities that may arise and that could inform my practice. I also see a possible extension of this
research into looking at ways of bridging the gap between establishing a co-operative learning community within the class to the wider technical learning environment.

For me, this has been a long and painful journey, writing and rewriting, again and again, what was and still is such a joy in the process. The learning is fine, the dynamic established, the transition paths explored, the knowledge about learning so deepened so profound, that happens as we traverse along paths, previously unawares, and now fully felt. This dynamic is now in conscious awareness for all those who have learnt with me in the past. They take the knowledge of how different learning can be, how the learning is ongoing, insightful, spontaneous and fun. How we can play with ideas as we go beyond rationality, as we allow ourselves time to sit awhile. how it’s alright to drift into time in between and then journey back, albeit reluctantly, to analyse and sift, the knowledge gained in this time in between. The ease and the trust that was established so well, enabling them to accept such a paradigm shift, such a change from the norm of learning about code, about data and logic, about formula and function. Now they can see that these things can exist alongside of those trips into a space that is kind and at ease, a time-out to rest the overworked intellect. Now I can see the process evolving, ongoing, not stopping both in the learning and the research, how I have taken small steps, finely-tuned, reflecting on outcomes every time I stretch out, knowing full well the crashes occurring as I jump too far out for the gap to be bridged, the cultural gap that takes time, trust and acceptance to narrow, to dissolve so that my methods are acknowledged.
Chapter 9: Conclusion

Providing a framework of systems ideas helps add to the coherence, a meta-structure required, to this mess of complexity I deal with here as I consider how learning is deepened in a technical world, as students gather skills about computing and science to go into the world to earn their keep. And when they return in years to come, as many of them have in the years gone by, I know that they have retained the skills when applying them now at home, work and play. I know the success of seeing how they have remembered the semester, or two they spent with me, learning about systems, projects and screens, and, on the side, learning far more than that, as I equipped them well with many skills for life.
Appendix I

Skill Rehearsal Exercise

Feel yourself lying alone in the bottom of a little rowboat. Your are being carried out into the ocean by gentle rhythmic waves. The ocean sparkles like a million diamonds in the sunlight, and you feel very relaxed and drowsy as the rhythmic, rocking, gentle waves carry you out and out and out.

Gradually you begin to notice that the pattern of the boat is now going down and around and you are being carried lightly into a vortex of water that is taking you down and around, and around and down, deeper and deeper and deeper into the ocean.

The water does not close in on you, and you watch with interest how it rises above you, a wonderful circle of water through which you can see the sky. You are in a tunnel of spinning water, going down and around, and around and down, and around and down. Finally, with a little bump, you land on the ocean bottom.

Getting out of the boat now, you discover on the ocean floor a circular bronze handle, which you pull. Sand falls away and a door opens on the bottom of the floor. The door takes you into a stone stairwell leading to a realm underneath the ocean floor. You begin to go down the stairs, which go down and down and down and down, deeper and deeper, down underneath the ocean floor - down and down and down and down. Finally the stairs end and you find yourself looking out on a great cavern filled with the most gloriously shaped and coloured stalagmites and stalactites.

You wander through the cavern admiring the mighty shaped and jewelled walls until you come at last to a stone corridor. Walking through this corridor you now continue on your journey until you come to a large oak door over which is written: The Room of The Skill.
Enter that room now and find yourself in a place completely imbued with the presence and spirit of your skill. Just being there is like osmosis, and you already begin to feel improvement. But there are more possibilities here, for in the room is a Master Teacher of the skill - perhaps someone you know or a historical figure or someone you have never seen or heard of before. Whichever it is, this person or being is your Master teacher, and in the time that follows this teacher will give you deep and potent instructions to help you improve your skill.

The Master Teacher may speak in words or not. Teachings may present themselves as feelings or as muscular sensations. The Master teacher may have you practice old skills or learn new ones. The teacher may be solemn or quite comical.

However this being works with you, the learning on your part will be effective and deep. And you will be feeling increasingly more free, more spontaneous, and also much more confident that the skilled person within you is emerging and developing and overcoming inhibitions and blocks of all sorts as well as undergoing some very intensive training and learning.

You now have five minutes of clock time, but with the use of alternate temporal processes this is equal to all the time you need - hours, days, or even weeks to have a rich learning session with the Master Teacher, rehearsing and improving your skill.

Begin
Allow a full five minutes for this

Now it is time to leave the Master Teacher, you will thank this being for the help you have received and know that you can return here for further training and instruction as you need it. But before you go, notice the special light that is streaming down form
one portion of the ceiling. That is the light of confirmation of you in your skill. If you wish, go and stand under that light. As you do so, you may feel a deepening and a confirming of your skill throughout your mind and body. The skill becomes a natural part of you. You are being confirmed in your skill.

*Allow thirty seconds to a minute for this.*

Leave the room now, carefully closing the door behind you. Quickly go down the corridor and run through the great cavern, feeling the skill growing in you all the while. Go up the stone steps, up and up and up until you emerge on the ocean floor. Put the door back and get into the boat, pushing it into the circular column of water. The vortex reverses now, carrying you up and around and up and around, higher and higher and higher and higher. And as you rise you feel your skill continuing to grow into you, pervading your whole being, rooting itself in all your nerves and sinews, your neurons, your cells, and your synapses. The skill is streaming with felicity through all conduits and making itself present in your whole being.

The boat reaches the surface of the ocean and heads toward shore. As it is carried by the waves, you feel your skill in you so that you are getting very excited about getting back and trying it out. The waves move faster now, up and down, and up and down and up and down and up on the last wave, and with a downward swoosh your boat is carried to shore. Leaping out, you pull the boat to a mooring pier and tie it up. You are wide awake and full of your skill, and you get up as soon as you can and eager to try out your skill, physically.

*Houston (1986:178-179)*
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