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ABSTRACT

This collection of 16 papers grew out of a seminar held in 1989 on Research in Distance Education (RIDE). The participants in the seminar and those whose papers are included here were searching for new research methodologies, broadening their research agendas, and putting the practice of distance education under scrutiny. The following papers are provided: (1) "Introductory Comment" (Terry Evans); (2) "What Ever Happened to the Silent Revolution? Research, Theory and Practice in Distance Education" (Alistair Morgan); (3) "Hermeneutic Theory in Research in Distance Education" (Margaret Grace); (4) "Putting Theory into Place: Developing a Theory-Based Comparative Research Project in Distance Education" (Terry Evans); (5) "Research and Distance Education in Third World Contexts" (Richard Guy); (6) "Post-Fordism and Research in Distance Education" (Mick Campion); (7) "Chaos and Educational Computing: Deconstructing Distance Education" (Chris Bigum; (8) "Reporting Research in Distance Education" (Daryl Nation); (9) "Action Research in Distance Education: Some Observations and Reflections" (Herbert Altrichter); (10) "A Case-Study of Research Methods Course Development for Masters Awards" (Ted Nunan); (11) "Before...and After: MBA Participants' First Year Experiences of Distance Learning" (Dale Holt, Stanley Petzall, and John Viljoen); (12) "Pedagogical Evaluation and Change: Teaching and Research in Mathematics Distance Education" (Judy Mousley and Mary Rice); (13) "Culture, Curriculum and Mathematics Distance Education" (Nerida Ellerton and Ken Clements); (14) "If It's Good For You Do You Have To Swallow It? Some Reflections on Interaction and Independence from Research into Teletutorials" (Diane Thompson); (15) "Tinker, Taylor, Soldier, Spy...Roles and Challenges in Evaluative Studies of Technological Innovations" (Angela Castro); and (16) "At the End of the Line Is a Learner--Whom Is Distance Education Really For?" (Sue McNamara). A list of more than 400 references concludes the report. (DB)

Revised papers from the first
Research in Distance Education seminar,
Deakin University 1989

Research In Distance Education 1

Revised papers from the first Research in Distance Education seminar, Deakin University 1989

Edited by Terry Evans

Deakin University

Institute of Distance Education

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Introductory comment

My purpose in organising the first Research in Distance Education (or RIDE as it became known) seminar was to create a venue in which people with an interest in distance education research could meet to discuss their work. My colleagues in the Institute of Distance Education - especially the Director, Professor Jocelyn Calvert - supported the idea, which they saw as consistent with the Institute's responsibilities for teaching and research in distance education. When I mentioned the idea to other colleagues in the University and in the distance education community more widely, there was even more encouragement for me to press ahead.

My intention was to provide an inexpensive and 'open' seminar for people to participate in because of their interest in research in the field. The seminar was structured so that people could present their ideas and work in whatever manner they saw as appropriate. Thus there were thematically organised paper presentation sessions, 'round table' discussions, 'work-in progress' sessions, in addition an open forum after dinner on the first night. Two days in November 1989 were set aside during what proved to be glorious spring weather in Geelong. The airline pilots had commenced their protracted dispute (it is still hardly what can be called 'settled') which meant that some people were unable to attend because of the lack of flights or their unreliability. Some people braved a Hercules flight with the RAAF to arrive at RIDE, others made similar Herculean efforts by driving, bus-riding etc. hundreds, even thousands, of kilometres, to participate. A few people from overseas coordinated their trips to Australia to be at Deakin for the seminar. With such enthusiasm I knew that the seminar would be a success, but it is only now that I appreciate the quality of that success.

What I did not know at the time was that the various contributions to the seminar reflected such an energy and concern for research, theory and practice in distance education. In fact, it is only since I have been editing the final drafts to this collection of revised papers presented at the seminar, that I realise just how privileged I was to be with such a stimulating group of people. These were not people who were merely interested in applying 'tried and tested' research methods to 'traditional' research problems in distance education. Many participants were searching for new methods and methodologies, broadening and envigorating their research agendas, and also putting the practice of distance education under critical scrutiny. As the organiser of the seminar I was often so busy making sure many of

the housekeeping matters were in order - for which Lyn Sceney also deserves thanks - that I did not really appreciate the true import and, in particular, the common threads between many of the contributions.

In the organising of the chapters of this book I have tried to reflect the common threads which have emerged between them and also to place the chapters in a sequence which is useful for the reader. However, making your own way through the various chapters is likely to be just as fruitful. I should also point out that this is not a complete collection of everything which was presented at RIDE'89. Rather it is an edited collection of revised versions of most papers. The authors made their revisions in the light of comments they received at the seminar and from others they consulted. Part of the revision process involved changing their work from seminar papers with a presentation to an audience in mind, into book chapters with a readership in mind. In this sense, *Research in Distance Education 1* is not a collection of papers presented in November at RIDE'89, but a book collection written from that context in 1990. You will notice that the authors refer to each other's chapters and this is an example of how the writing process for the book was shaped by the experience of RIDE'89. I hope that each contributor sees that *Research in Distance Education 1* is a suitable testimony to their efforts and to the comments and encouragement they received from all the RIDE'89 participants.

Some of the RIDE'89 participants and the contributors to this book are postgraduate students in distance education; some are the supervisors and examiners of such people. Postgraduate research in distance education is a vital element in the development of the theory and practice of distance education. Not just through the particular pieces of work that the students contribute to the field, but also because their experience of such scholarship will enable them to use their creative minds and critical acuity to provide future leadership to research in distance education. RIDE'89 and *Research in Distance Education 1* is partly a celebration of their work. It is also a celebration of the work of distance educators who will not ignore the place of research within and through their own teaching. There is much to be learned from distance education, not just by the students!

I envisage that *Research in Distance Education 1* will help a readership interested in research in distance education to share in the ideas and work presented at RIDE'89. But, more than this, I am hoping that this book will encourage readers to develop their research ideas and work, and to share them with the research community in distance education.

Terry Evans
Institute of Distance Education
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August 1990

One place to share ideas and work about research in distance education is at RIDE'91 which is to be held at Deakin University in November, 1991. Information about RIDE seminars and contact with the individual contributors to *Research in Distance Education 1* can be made through me.

Part 1: Issues

Chapter 2

Whatever happened to the silent scientific revolution? Research, theory and practice in distance education

Alistair Morgan

THE POINT OF departure for this article is the title of the recent book: *Qualitative approaches to educational evaluation: the silent scientific revolution* (Fetterman, 1989). I was particularly interested in the suggestion in the title about the idea of a 'silent revolution'. How did this idea relate to my own work in research and evaluation in the Open University? Also how did the idea relate to work at the international level in distance education?

The claim of Fetterman seemed to be particularly timely when I had been involved in methodological controversies in a recent OU project, the home computing evaluation project. The issue of debate was not only about qualitative *versus* quantitative methods, but also about the overall planning of the project. To what extent were we 'collecting the information the university needed' to fulfil the evaluation requirements of the Department of Trade and Industry, who had provided the funds for the computers and how was the evaluation 'brief' to be interpreted? Home computers are a major new feature of OU study, what is the student's experience going to be like? What is the impact on study patterns? What influence do home computers have on issues of inequality? How do home computers in distance education relate to the concept of 'social distance' as described by Evans (1989).

Although a formal document had been prepared as an evaluation proposal, there had been little detailed discussion of the project. However, at an early meeting of the evaluation team, members of staff responsible for the survey research in the Institute of Educational Technology rather suddenly posed the question, 'when do we want to send out the surveys?' and expected to get a definite answer. For some of us in the group, it did not seem at all clear that we even needed any large scale surveys at that stage in the project. We were more concerned to elaborate the crucial questions to address in the evaluation project. How did this project relate to theoretical work for understanding adult learning? It appears that survey methods have an organizational 'momentum' of their own. Needless to say the meeting ended with little agreement.

The aforementioned meeting, linked to Fetterman's (1989) phrase, 'the silent scientific revolution' initiated some of the thinking behind this

paper. How are research and evaluation projects planned? What theoretical basis (if any) provides a grounding for research studies and what is the dominant research tradition? In addressing these questions, the issues for debate led into developing a sort of social history of research and evaluation in educational technology, and distance education more generally.

Fetterman (1989) draws together a diverse collection of material from what he calls the 'qualitative classics' by Eisner, Patton, amongst others, as well as 'new developments' such as the work on phenomenography of Ference Marton, and places the discussions in a wider paradigmatic context and the thinking of Kuhn (1962) - that of a silent revolution in evaluation.

Fetterman also points out that revolutionary change occurs in many stages from innovation through to acceptance. He suggests that the 'classics' in the volume represent accepted innovations in the field which create an hospitable environment for new developments. (There are many other writers and volumes of work which could be cited as indicative of a paradigmatic shift in research and evaluation in education, however, it was the timeliness of the publication as well as the title, which initiated some of the present thinking.)

I want to address the question of how this 'revolution' has impinged on research and evaluation in distance education. Has the same sort of revolution occurred? Or is distance education still embedded in approaches to research and evaluation which have long since been discarded by educational and social sciences? A more polemical sub-title for this article could have been 'beyond mindless data collection'. However, this article is not intended as a polemic, but rather, as a debate about research, theory and practice in distance education.

I will argue that changes in research approach have occurred to some extent, and have had some influence in distance education, but that in no sense can a 'revolution' really be considered to have occurred. Research and evaluation in distance education seems to embody a number of issues which act as barriers to change.

Certain features of the course design and development process and distance education organisations, act as barriers or constraints to change. Some specific reference will be made to the United Kingdom Open University (OU), with which the author is most familiar, but the issues would seem to be relevant to distance education more widely.

There seem to be at least three crucial areas which influence the style and approach to research and evaluation:

- The role and influence of educational technology with the assumptions which it embodies about the course design process and the relationship between research and practice.

- The nature of the organisation and the structures within which research and evaluation is conducted.

- The individual staff involved, their backgrounds and interests.

The role and influence of educational technology

There can be little doubt that educational technology has had (and still does have) a considerable influence in distance education. Educational technology is at the centre of the course planning , design and production process in a large number of institutions which offer courses for off campus students. It has been particularly influential in the OU (Harris, 1987) and also other distance teaching universities (Evans and Nation, 1987a).

As educational technology has been central to course design and production processes, one assumes that it will have had an important influence on the types of research and evaluation carried out in distance teaching institutions. In discussing what approaches to research and evaluation are likely to be derived from educational technology, it is essential to address the question, 'What is educational technology?' This seem to be particularly important as there are many simplistic and caricatured descriptions of educational technology in the literature.

The work of Derek Rowntree (1974, 1982) provides some of the most influential and comprehensive writings in educational technology and also gives insights into how his interpretation of educational technology has changed over the last ten years or so. This work is also important, as it is closely related to the practice of educational technology in the course development work in the Institute of Educational Technology in the OU.

Educational technology is a rational and systematic problem-solving approach to curriculum development, which has four basic elements: (i) identifying purposes, especially in terms of objectives; (ii) developing the necessary learning experiences; (iii) evaluating the effectiveness of the learning activities in achieving purposes; (iv) and improving the learning experiences in the light of evaluation (Rowntree, 1974).

Rowntree's work (1982) makes some brief reference to recent changes in the field. There is mention of knowledge structures, cognitive models of learning and ideas from humanistic theories of Carl Rogers and freedom in learning. However, the basic structure of the book is unchanged. As the author points out, it is the same basic model, although it is 'presented more knowingly'. It sets out educational technology as a technocratic approach to course development. There are thirty pages devoted to discussing

objectives - admittedly, there is a final section entitled 'objections to objectives'- and then a further thirty pages on developing objectives. The message seems to be clear, objectives are a basic feature of good distance teaching material. Educational technology is portrayed as a set of neutral and value - free procedures.

The criticisms of objectives, both on empirical grounds and conceptual grounds, are that they do not describe adequately what we were trying to develop in our students; this led to other initiatives. Knowledge structures became the new 'buzz-word' in course design. The difficulties experienced by students would be overcome if teachers and course writers worked out the logical conceptual structure in the academic material and then presented this structure to the students. In spite of the claims of this approach, relatively little has been achieved in practice; not surprisingly, in view of the problems of transforming academic discourse into 'knowledge structures'. Again, knowledge structures are another aspect of a rational production system with the emphasis on transmission modes of teaching. Dave Harris (1987) in his critique of the OU, which draws on Critical Theory, uses the concepts of 'openness' and 'closure'. They are:

> designed to illustrate how every kind of openness associated with distance education seems to have its opposite side, a tendency to closure, which also has to be considered.... In developing rational principles of course design intended to provide all applicants equally with the same high quality standard courses, certain other possiblities and outcomes have to be closed off (Harris, 1987, p. 3).

The criticisms of the 'explicit pedagogy' of the OU have been expressed succcintly by Harris and Holmes (1976) in an earlier article which is part of the overall project referred to above; they express it as follows:

> Our point is that many course team academics have resisted the more obvious devices employed by the rational curriculum planners, and have managed to include in their course materials arguments which were not intended to be authoritarian didactic pieces of expert knowledge. Some academics do intend their students to seek personal meanings in the texts, to begin to apply the arguments to their own surroundings and so on. However, given the immovable nature of the one-way at a distance teaching system, and the strong possibility of a 'hidden curriculum' fostered by the assessment system, such liberating intentions seem unlikely to be realised. The reality of the OU teaching system for students is one where large quantities of printed material arrive which express necessarily abstract and universalised arguments. No dialogue with the writers can be held concerning the personal relevance of these arguments. The only kind of communication with central institution takes place via frequent assignments, which often call for a personal response, while being graded according to impersonal objective criteria (Harris and Holmes, 1976, p. 84)

This analysis by Harris and Holmes identifies some of the potential problems of distance education, the difficulty of dialogue with students, the

assessment system and the way the distance teaching texts tend to be perceived by students as authoritative bodies of knowledge, ie. issues of closure in relation to academic discourse. Although these problems may not be as severe as these writers suggest, they seem to be an aspect of the traditional educational technology approach.

A central feature of the educational technology approach is the 'evaluation of the effectiveness of the learning materials in achieving their purpose'. Closely linked to this feature of evaluation is the rhetoric which has been claimed for the OU of the self-improving system. Information on the efficiency of the learning materials will inform change, as in the engineering models of feedback and change.

A recent publication by Thorpe (1988) on the evaluation of open and distance learning provides a useful collection of procedures, with the aim of encouraging practitioners to engage in evaluation. However, this work, on essentially formative evaluation has a somewhat narrow focus. It is still what could be called a 'technified view' of evaluation, grounded in the culture of traditional educational technology. There is no reference to a more critical appraisal of open learning programs. Also, there is no reference to the micro-politics and sub-cultures of organisations (Westoby, 1988) and how these issues have a crucial role in the conduct of evaluation and the process of change (Morgan, 1990). The relationship between research, evaluation and practice is seen as unproblematic. This is essentially the 'technical rationality' referred to by Donald Schön (1983). For Schön the notion of technical rationality is an inadequate model of how professionals act in practice and he develops the idea of 'reflection in action' as a more realistic way of understanding practice and how professionals interpret research findings.

In the OU, how was the function of student feedback to be organised? Within the Institute of Educational Technology (IET), the Survey Research Department was set up to enable large-scale postal survey questionnaires to be handled routinely. (This function is now carried out in the Student Research Centre, after a departmental reorganisation in 1985/6 abolished existing research groups and established three major Centres in the Institute.) Many of the original staff working in this area had backgrounds in market-research; and the size of the student population, as well the distant locations of students, made survey methods attractive. Also, much of the research and evaluation in the audio-visual media area has adopted similar approaches Of course, it is impossible to ignore the size of the student population with policy evaluation, for example, in relation to access to video cassette recorders. And if large scale surveys are to be carried out, an efficient procedure is required.

However, the organisational structures have served to create what could be called 'a hegemony of survey methods', in that the system makes 'mindless empiricism' very easy! This is not just another round in the qualitative versus quantitative argument: framed in those terms, the arguments are

not very fruitful. Perhaps the most significant distinction is 'intelligent' versus 'unintelligent' research and evaluation, or to express this less polemically, atheoretical rather than theoretically grounded. The criticism is not with survey methods *per se*, but the way in which they are carried out. A vast number of routine surveys may fulfil very short term goals of some administrators to answer specific questions. However, research should not be restricted to such studies, as the findings do not contribute to building up our knowledge and theories of teaching and learning in distance education.

For example, in IET in the OU, the potential of many of the evaluation studies has not been realised, because they have not built upon one another to further explore key issues of teaching and learning. An example, of the type of result which can be achieved is the work of Parlett and Woodley (1983) on student drop-out. They drew together insightful interpretations of a number of studies which related together to provide a better holistic understanding of the phenomenon of student drop-out in the OU.

Not all the students' responses to course materials has been carried out by large scale survey research, such as in the annual survey of new courses. So for example, there are instances where an IET member working on course development will collect and coordinate a diverse range of materials and work with a course team to interpret the data and discuss change. However, this form of working does not have the organisational momentum referred to above, in the sense that the procedures have not become routinised and institutionalised.

There is a clear need to develop a strategic plan for research and evaluation, that is located within a broad theoretical framework, and which addresses issues of policy and practice. This focus is needed because both qualitative as well as quantitative studies can be 'mindlessly repeated' in a way which does not contribute to an overall coherence. At present, within the Student Research Centre there is a renewed interest in developing theory for informing and grounding the research and evaluation studies that are carried out. This 'new direction' is discussed further in the final section of this paper.

Although the role of educational technology has been very influential, both in determining the nature of the pedagogy, and also the style and approach of much of the research and evaluation, there has been a growth of what could be called the 'new educational technology'. There has also been work on group processes in course teams, ideological critiques of the teaching of courses in information technology, studies in the qualitative-phenomenological tradition and social historical analyses of course development.

Qualitative-illuminative studies of learning

Over the last two decades or so there has been a steady growth of research in student learning which has adopted a qualitative-illuminative approach. For example, Becker, Geer and Hughes's (1968) work on assessment, and Miller and Parlett's (1974) research are two early influential studies.

There is also a body of research work which can be broadly located under the field of phenomenography (Marton, 1981). The research, drawn together by Marton, Entwistle and Hounsell (1984) provides good examples of the range and nature of the work in this tradition. Such work starts from the premise that 'real learning' for understanding, requires learners to change their ways conceptualising an idea, concept or some aspect of the world around them. This conception of learning is in contrast to learning which is seen as the acquisition of pieces of knowledge and information.

The phenomenological perspective, which Marton and Svensson (1979) have labelled the 'second-order perspective', describes learning from the learner's perspective, or 'from the inside'. This perspective is in contrast to the 'first-order perspective', which describes learning 'from the outside', as represented by experimental studies, psychometrics and traditional evaluation, measuring the achievement of objectives. There are some broad parallels here between the critique of positivist and interpretive paradigms by Carr and Kemmis (1986).

In relation to distance education, the phenomenological approach to understanding student learning has been developed by Gibbs, Morgan and Taylor (1984) to provide holistic descriptions of how OU students experience their studies. This work relates the elements of orientation to study, conception of learning, approach to study, and learning outcomes, to provide a framework for understanding learning from the learner's perspective. I have summarised this work previously (Morgan, 1984) to help to draw it to the attention of the distance education community To promote research within what can be loosely termed the 'qualitative-illuminative tradition' seemed particularly important when some writers within distance education have lamented at the lack of a clearly defined paradigm for research (Bååth, 1982). Other workers such as Holmberg (1986) argue that distance education is a different discipline in its own right and appear to ignore approaches to research and evaluation which have originated more generally in the educational and social sciences.

Phenomenological approaches to research and evaluation also embody a very different relationship between theory and practice, than the traditional educational technology approach. Marton and Svensson (1979) argue that this relationship is not of a 'technical' kind but is rather based on the assumption that those who are to take the action are those who know best how to research and implement it.

One of the crucial issues to stress is that the relationship between theory and practice is *emancipatory*. How different this is to educational technology. In the 'golden era' of educational technology, educational technologists, or course developers operated by drawing on ideas from programmed learning, advised course teams on the use of objectives, self assessment questions and the sequencing of learning materials etc. The implicit assumption seemed to be that these features are the key ingredients in quality distance learning materials.

Studies from a phenomenological perspective, besides describing and illuminating students' experiences contribute directly to reflecting on practice; to raise teachers' (course team's) awareness of what students are really doing as they learn. For example, aspects of course design and assessment can lead students to adopt surface approaches to study, with a corresponding influence on the learning outcomes. These studies also suggest that providing the opportunity for students to become more aware of how they tackle their studies, can serve to help their development as learners.

So to what extent has this type of phenomenological research developed in distance education? Has the silent revolution as suggested by Fetterman (1989) occurred? There are some recent studies following in this tradition, for example, Holt, Petzall and Viljoen (1989) however, they are few in number. There is certainly not the increase in research studies in distance education that there has been in education in conventional settings, both at school as well as post-compulsory levels. For example, Ramsden (1989) draws together studies which describe students' conceptions of subject material, and uses this understanding as a basis for improving learning. This work also aims to create a cooperative approach between teachers and researchers, and that research can serve as a bridge between theory and practice:

> Our view of learning implies a pluralistic concern to provide practitioners with tools they can use to improve their students' learning, rather than an absolutist conception of the 'right' and 'wrong' teaching and learning methods. Our view accepts that almost every act of teaching is an act of practitioner—research. There is a real sense in which teachers must in their everyday activities, strive to test hypotheses about why children are failing and learn to make judgements on the results of their tests, (Marton and Ramsden, 1989, p. 283).

Although Marton and Ramsden advocate cooperative research, they do not go as far as the views held by some action researchers of abandoning the distinction between teachers and researchers, they favour a eclectic approach.

Critical theory and action research

There seem to be indications of new directions in research in distance education from recent work which has been informed by critical theory. As noted earlier, the strength of the influence of educational technology in distance education, has not provided an intellectual climate which has been receptive to the notion of research as critique. So, for example, the work of Harris (1987) has only fairly recently become recognised within the Open University, itself. Also his work is probably known better and had more influence outside the OU, rather than amongst researchers and teachers (course teams) within the organisation. Can the approach of critical action research, as outlined by Carr and Kemmis, (1986), become a legitimate line of research in distance education? What are the barriers to this change taking place? Perhaps it is worth pointing out that, although Fetterman (1989) suggests that a silent revolution has occurred in evaluation, his focus on the American educational community did not include any work originating from a critical perspective.

Based on the critical social science of Habermas, Carr and Kemmis (1986), have attempted to develop the view that emancipatory action research could be a way of relating the perspectives critical social science to research in education The aim is to develop a critical educational science, in which the focus of research is for education and not about education.

In looking at trends in research in distance education, there are some indications of new directions, breaking out of the influence of educational technology. So for example, Burt (1989) is developing what he calls a field of inquiry labelled 'cultural and ideological technology' as a form of critique to go beyond the rationality of educational technology which ignores the ideologies which underlying educational debates.

One of the more important developments is the way Evans and Nation (1989) have located the idea of 'critical reflection' on the intellectual map in distance education. Drawing on work from critical theory and particularly the ideas of Giddens (1984) they have identified reflection as a central focus of learning, and also an approach to research which has the focus of educational change. As Evans and Nation define critical reflection as follows:

> Critical reflection is the process through which human beings use their analytical powers to assess elements of their lives against their explanatory frameworks (theories). Critical reflection is the precursor to change because, through the recognition of human agency, it encourages people to seek to improve lives in their own terms (1989, p. 10).

They have interpreted the work of critical theorists in a fairly broad manner, to develop the idea of critical reflection as a 'lens' for looking at re-

search, theory, and practice in distance education. As the authors have remarked in conversation 'you don't have to take the full intellectual journey to Frankfurt' to gain insights from Critical Theory and the essence our the approach. Within this approach, the aim is to create the notion of a community of researchers and practitioners to engage in critical reflection, so as draw research, theory and practice into closer allegiance. This approach has the potential for integrating the view of research as critique, with studies which have origins in the qualitative - illuminative tradition. The sort of research agenda for distance education which is derived from this basis looks very different from what is the 'dominant paradigm' derived from educational technology.

It is interesting how in Australia where there is a long history of distance education, there appears to be a new interest in research as critique, particularly in focussing on the issues of 'instructional industrialism' (Evans and Nation, 1987a). As distance education in Australia is being forced to restructure under Federal directives of 'efficiency and effectiveness' in the 'marketplace' for students, researchers and practitioners are questioning what are the most appropriate forms for the future of distance education. For example, Campion (1989, and in chapter 6) drawing on literature from politics and economics debating the crisis in the world economy, is exploring the ideas of Piore and Sabel (1984) in an effort to formulate future strategies. He argues for the notion of 'flexible specialisation' in production in distance education, as an alternative to the dominant mode of 'instructional industrialism'.

Some of the different traditions in research and evaluation have been outlined above. They provide some insights for what a future research agenda could be. To what extent has there been a change at the international level?

International perspectives in research in distance education

The debate so far has looked at how educational technology has been a dominant force in shaping the approach and style of research and evaluation in distance education. In the OU for example, certain organisational structures, as well as the individual actors, have created what I have called the 'hegemony' of survey methods.

Other approaches to research, phenomenological studies of research in student learning and critical theory and action research have been looked at briefly, to show that these alternative approaches are represented in distance education, although, these are by no means perceived as mainstream traditions. What are the trends at an international level? There is

not space to do a detailed review or analysis of the literature, at this stage, so any answer to this question must be regarded as partial. The collection of papers from the 1988 ICDE Conference (Sewart and Daniel, 1988), provides one starting point for this brief analysis. Is there any evidence that the Fetterman's 'silent revolution' is occurring in distance education? The answer would seem to be no. There is a diverse collection of projects clearly located in the experimental and correlational tradition. For example, experimental studies comparing the efficiency of learning through televised instruction, correlations of course features to test scores, aptitude - treatment - interaction studies, to mention a few. It seems that the culture of positivism and the research and evaluation originating within this culture is well represented. There are a few studies in the qualitative - illuminative tradition, as well as the use of surveys within the context of lobbying for underprivileged groups, but hardly on the scale to suggest a revolution is occurring.

Looking in the literature more widely, is there a body of 'classic studies' which provide an hospitable environment for new developments? There are some signs that this could be occurring. So, for example, there is more of a diversity in research and evaluation than the narrow focus derived from educational technology and quantitative correlational studies. There is increased debate about theory in open and distance learning and a questioning of traditional educational technology, although the changes do not seem to represent a 'revolution'.

Developing programs for research and theory

It was suggested earlier that in the OU, there was a new interest in developing theory as a way to relate studies together. Theory is not to be seen as some form of monolithic predictive theory, as is the case of research in the positivist tradition. Rather, a range of theories, in the general area of adult learning are being drawn together to form a basis for reflection on research and practice. Theory is also recognised to have a legitimate role in the activities of the Student Research Centre of conducting studies in applied research and development in distance education. Consequently the aims could be described as follows:

- For the Student Research Centre as an academic unit within IET: to understand and develop theory in order to improve adult learning and participation in learning opportunities.

- For the Student Research Centre as a university unit: to improve the institution as a promoter/agent of learning opportunities for adults.

Clearly this raises the key question of what theory, or theories to use and how to relate theory to practice, but these are the subject for another article. However, this seems to be a major new initiative in developing a program of research and evaluation. These initiatives with a theoretical grounding are providing the intellectual climate for new directions in research and evaluation (Morgan and Farnes, 1990).

Perhaps there are some parallels to the way Carr and Kemmis see an adequate view of an educational science:

> It must develop theories of educational practice that are rooted in the concrete educational experiences and situations of practitioners and which enables them to confront the educational problems to which these experiences and situations give rise (1986, p. 215).

In conclusion, from the literature, it seems clear that the silent revolution identified by Fetterman (1989) has not really occurred in distance education. However, important initiatives are in progress. The development and elaboration of the 'new educational technology', which goes beyond the rational-technicist traditional approaches, will provide a location for theory which takes account of the social and political contexts of the learner, teacher and the institution. The new educational technology will provide understandings of the realities of adult learners and how they change and develop. It will also focus on the realities of complex institutions and how the politics and culture of organizations influence educational change.

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Chapter 3

Hermeneutic theory in research in distance education

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In a series of influential articles published between 1981 and 1984, a group of researchers at the Open University known as the Study Methods Group introduced the distance education community to a phenomenological approach to the subject of student learning. The group located their work in 'a growing body of literature on research in education which attempts to describe student learning in natural settings' (Morgan, Taylor, and Gibbs, 1982, p. 103). Such research, which includes a variety of methodologies deriving from anthropology and phenomenological sociology, will be referred to in this paper by the term 'qualitative'. Subsequently in an attempt to encourage qualitative research in distance education Minnis (1985) reviewed several research strategies which come under the qualitative umbrella, including ethnography, case study and grounded theory.

In Australia, Small, (1985); Nation, (1985, 1987); Evans, (1987); Kelly and Shapcott (Grace) (1987); Parer and Morgan (1988); and Inglis (1987, 1988) have added to the small body of research which takes up the challenge set by the Study Methods Group by aspiring to an *understanding of the distance learner as a whole person* (Morgan, Taylor and Gibbs, 1982).

In my own research into the meaning of the experience of off-campus study I have chosen to use in-depth interviews as the main way of gathering data. This choice of methodology is determined partly by pragmatic considerations; participant observation is problematic in distance education research because of the dispersed nature of the student population. By locating interviews in the students' homes or places of work, these problems can be addressed to some extent. At least some opportunities for the observation of personal contexts are provided thereby. However, as well as being suited to the circumstances of the field, interviewing is preferred because of my interest in the phenomenology of the interview event and the hermeneutics of interpretation of verbal and non-verbal communication.

As a woman and a feminist I am also interested in gender issues in distance education, and in feminist research methodologies. However, I find that few qualitative researchers and even fewer feminist scholars indicate any familiarity with the literature of the hermeneutic tradition, although much of their critique of conventional theory and practice raises questions

about issues which are central to hermeneutic theory, such as understanding (Bogdan and Taylor, 1975; Simons, 1982); meaning (MacDonald and Sanger, 1982; Tripp, 1983); perception (Douglas, 1985); contextuality (Mishler, 1986; Reinharz, 1979; Simons, 1982); objectivity (Bogdan and Taylor, 1975; Oakley, 1981; Stanley and Wise, 1983); and relatedness (Kirkup, 1983; Mishler, 1986; McKee and O'Brien, 1983; Middleton, 1988; Oakley, 1981).

The commonalities between feminist thought and hermeneutics are recognised by Bowles (1984) who commends a study of the hermeneutic tradition to feminists as an intellectual strategy for connecting feminist critiques of 'logocentrism' to those of others who are also questioning the dominant Western traditions of thought. In the following discussion of certain aspects of qualitative research methodology and feminist scholarship the capacity of hermeneutic theory to illuminate and enrich diverse research approaches is further explored.

The research design and process

Quantitative research is guided by a clearly defined set of procedures called the hypothetico-deductive method which reflects its underlying epistemological principles. Ideally, such a research project proceeds through the following stages in a linear fashion: definition of research problem, formulation of hypotheses, operational decision-making, design of research instrument, collection and analysis of data, and finally, statement of conclusions and results in terms of the problem as originally defined (Spradley, 1980, p. 27).

There is a corresponding close association between epistemology and methodology in the research literature of the 'alternative' paradigm, but methodology is less clearly defined. Many qualitative researchers refuse, like Parlett and Hamilton (1977, p. 13), to formulate any 'standard methodological package', preferring instead to discuss their 'general research strategy'. There are good reasons for this. The kind of research design and methodology commonly prescribed for quantitative research is criticised as an ideal formulation which not only denies the irregularities of actual research practice but also precludes the inclusion of much interesting material as research data (Cook and Fonow 1986; Johnson, 1975; Oakley 1981). Rather than try to control for, or eliminate variables in the research setting or data which are outside the scope of the original hypothesis, qualitative researchers seek to take advantage of unforeseen developments and idiosyncratic circumstances. To do this they require flexibility in research design and freedom to adapt their methods to the particular circumstances of the setting.

Many qualitative and ethnographic researchers describe their research as evolving through progressive modifications occasioned by unforeseen events in the field and by the reflective act of reporting. Johnson (1975, p. 25), talks about 'the emergent and problematic nature of field research'. Referring to getting 'the intuitive feel of the problem', Smith (1978, pp. 329-333), describes how accidental occurrences can influence the focus of the work. In the preface to their pioneering work on illuminative evaluation Parlett and Hamilton describe their work as 'heuristically organised':

> the researchers progressively focusing and redefining the areas of inquiry as the study unfolds, in the light of accumulating experience and as the crucial issues-to-be-studied become uncovered (1976, p. iii).

The cyclic pattern of such a process is more explicitly recognised by some, for example Hammersley and Atkinson (1983, p. 175) who describe it as a funnel, and Spradley (1980, p. 28) who illustrates his discussion of the research process with a circular figure which features progressive phases of data gathering, analysis and reporting. However, few researchers explicitly identify this well-documented cyclic effect with the process of understanding known as the hermeneutic circle (Gadamer 1976b, p. 118; Lindholm, 1981, p. 92; Veit-Brause, 1980, p. 131). This is surprising, in view of the fact that this concept provides a pattern for research design which satisfies the epistemological principles which guide qualitative research. It accommodates an approach which is exploratory in intention rather than goal-oriented; which gives positive recognition to the subjective prejudice and tacit knowledge of the researcher; and which acknowledges that the direction of the research is propelled by a dynamic interaction between the researcher and the research setting.

The hermeneutic circle

In proposing the hermeneutic circle as a conceptual model for research processes, it is not suggested that it constitutes a precise set of methodological procedures as a version of the standard scientific hypothetico-deductive method. While such endeavours may have occupied nineteenth century philosophers such as Schleiermacher and Dilthey, the scope of hermeneutics has been extended in the twentieth century and freed from its preoccupation with methodologism, notably by Gadamer and Ricoeur (Linge, 1977, p. xii).

The concept of the hermeneutic circle, or spiral as some authors describe it (Lindholm, 1981, p. 87; Veit-Brause, 1980, p. 69), is a generalised model which illustrates both the circularity of the processes by which understanding develops and the concept that the part is always to be understood in relation to the whole. It symbolises the traditional idea that the search for meaning is a process of ever-widening horizons (Lindholm, 1981, p. 96-

102), and the modern concept of a matrix of interacting horizons of meaning (Gadamer, 1976b p. 120) which envelop author, text and reader; or, in the case of a research project, researcher, subjects and reader.

The hermeneutic concept of understanding as symbolised by the circle or spiral symbol includes recognition of the fact that there can be no development of knowledge without foreknowledge:

> All understanding presupposes in the person who understands, as a condition of its possibility, an analogue of that which actually will be understood later: an original, antecedent congruity between subject and object (Humbolt, 1973, pp. 15-16).

In a significant advance on previous hermeneutic theory, Gadamer (1976a) widened the concept of foreknowledge by arguing that the consciousness of the one who seeks to understand is inescapably embedded in history and tradition. Such a consciousness constitutes 'prejudice', a concept to which he gave positive value. It operates at.

> the fundamental level that we can call... the 'linguistic constitution of the world'. It presents itself as the consciousness that is effected by history... and that provides an initial schematisation for all our possibilities of knowing (Gadamer, 1976a, p. 13).

Gadamer's philosophical exposition of the nature of prejudice and its influence on epistemology is especially relevant for feminist scholarship. Knowledge is socially constructed (Berger and Luckmann, 1967; Spender, 1981a); and sexism is encoded at the fundamental level of language (Spender, 1981a). Therefore, women's knowledge is different in important dimensions from that of men (Daly, 1978; Roberts, 1981; Smith, 1978; Stanley, 1980; Spender, 1981b). Arguably, then, gender must constitute prejudice in Gadamer's terms. The feminist claim that knowledge is inextricably both personal and political is therefore strengthened by reference to philosophical hermeneutics:

> The hermeneutic circle...means essentially that there is no such thing as a 'detached', 'neutral' or 'objective' place to stand when we know something. We are always speaking from a 'prejudiced' (in the sense of pre-judgment) and 'interested' and 'evaluative' posture. This is the circle, that we are intimately (personally, socially, historically) involved with what we claim to know (Bowles, 1984, p. 87).

As applied to the hermeneutic situation of a research project, the circular pattern of the process of understanding describes the path of the intellectual journey of the researcher through progressive stages of engagement with the field of study. In such a pattern the evolving direction of the project is produced by the tensions between various factors such as the researcher's conscious purpose, the tacit assumptions and value systems (or prejudice) which guide his or her approach, and the events produced

by the conduct of the research. As Veit-Brause (1980, p. 131) says, 'lived experience and conceptual comprehension illuminate and fulfil each other'.

This process corresponds to the traditional hermeneutical methodological procedure of constant referencing between text and context which is circular because, as Lindholm argued: In order to understand the meaning of the parts one must have some prenotion of the whole, but this prenotion is also influenced by our interpretation of the parts (Lindholm, 1981, p. 92).

By such a process the researcher is repeatedly brought back to the point of entry, but each time the place is comprehended differently because of the nature of the intervening journey. The point of arrival in such a journey is therefore a deepened awareness of one's situation, a change in self-understanding achieved through empathy and a cognitive appreciation of otherness. This becomes the starting point of further exploration (Veit-Brause, 1980, p. 69), a process which has no ending (Ricoeur, 1981, p. 158). The hermeneutic circle is therefore open-ended, a spiral rather than a closed circle:

> The nature of the hermeneutical experience is not that something is outside and desires admission. Rather, we are possessed by something and precisely by means of it we are opened up for the new, the different, the true (Gadamer, 1976a, p. 9).

The hermeneutics of the interview situation

According to Veit-Brause (1980), the word 'hermeneutics' derives from the Greek 'hermeneuin', which refers to interpretation. In Greek mythology, the task of Hermes, the messenger of the gods, was not only to deliver, but also to decipher messages, which were expressed in omens and signs. Interpretive methods are commonly employed in every-day social encounters, as well as in encounters with works of history, art, literature and theatre. Such events can be defined as hermeneutic situations in that: the implied, the hidden, the connative meanings and intentions have to be appreciated to get the full import of the information communicated (Veit-Brause (1980, p. 54). By this definition, the research interview is clearly a hermeneutic situation.

Researchers who are in the process of elaborating an 'alternative' paradigm find the 'standard' definition of the interview problematic because of their awareness of the complexities of the interpretation of meaning. Three essential aspects of this complexity which are subjects for debate in the literature of hermeneutics are recognised variously in the 'alternative' literature about interviewing. These aspects are: the contextuality of meaning; the penetration of facades to reveal hidden meanings; and the role of

both the one who tells and the one who hears in the production of meanings.

Bogdan and Taylor (1975, p. 7) write of the importance of using 'personal documents', including interviews, to 'allow us to see people in the context of their whole lives'. Hammersley and Atkinson (1983, p. 118); Simons (1982, pp. 120-121); and Pope and Denicolo (1986, p. 155) discuss the value of the situational context of interviews as a source of clues for the interpretation of meaning. Both Douglas (1985) and Mishler (1986) go further than this. In their different ways, both argue that the implications of the understanding that meanings are always situated, or contextually grounded, require a radical transformation of the traditional approach to interviewing. For Mishler, this leads to questions about the empowerment of respondents, whereas Douglas directs the reader to the complexities of discovering hidden meanings.

The fact that the conduct and interpretation of interviews involves the search for hidden meanings is mentioned by Simons (1982, pp. 111, 122-128) and Cockburn (1983), who write about case study research in education, and discussed at length by Douglas (1985), a phenomenological sociologist. Cockburn notes that this characteristic is shared by several research traditions with Marxian and Freudian analysis:

> So Wolcott's ethnography, like the Levi-Strauss school of anthropology, like Garfinkel's ethnomethodology and like Marxism and psychoanalysis *postulates an order of reality beyond the conscious and reflective states of intelligence.* That order determines the order of everyday experience and is glimpsed by research acts which penetrate the world of common sense (Cockburn, 1983, p.6 emphasis added).

It is interesting that in making this observation Cockburn is apparently unaware of Ricoeur's work on psychoanalysis and structuralism (Ricoeur, 1970; 1973; 1978). While recognising that Marxian and Freudian analysis have much in common with the hermeneutic tradition, Ricoeur made an important distinction which could serve as a valuable guiding principle for those exploring the comparatively new methodology of unstructured, interpretive interviewing in the field of education. Ricoeur characterised the hermeneutics practised by Marx, Nietzsche and Freud as the hermeneutics of suspicion, and advocated instead the practice of a hermeneutics of faith, characterised by respect and a willingness to listen.

The creation of meaning as a joint construction of both the teller and the told (Ricoeur, 1970) is discussed by Tripp (1983), who is exceptional among the case study researchers in the field of education in framing his argument in terms of hermeneutic theory. This issue is also explored by Simons (1982, p. 120) and MacDonald and Sanger (1982, p. 1) who, unlike Tripp, fail to acknowledge any familiarity with the literature of hermeneutics. Simons and MacDonald and Sanger each illustrate their discussion of

interview methodology by quoting the same passage from *A Compass Error*, a novel by Sybille Bedford. This passage so aptly encapsulates the hermeneutics of the interview situation that it is worth repeating:

> For the second time that day, deliberately now, Flavia said, 'It takes two to tell the truth.'
>
> 'One for one side, one for the other?'
>
> 'That's not what I mean. I mean one to tell, one to hear. A speaker and a receiver. To tell the truth about any complex situation requires a certain attitude in the receiver.'
>
> 'What is required from the receiver?'
>
> 'I would say first of all a level of emotional intelligence.'
>
> 'Imagination?'
>
> 'Disciplined.'
>
> 'Sympathy? Attention?'
>
> 'And patience.'
>
> 'Detachment?'
>
> 'All of these. And a taste for the truth - an immense willingness to see.'
>
> 'Wouldn't it be simpler,' he said, 'just to write it down?'
>
> 'Postulating a specific reader-receiver?'
>
> 'Casting a wider net: one or more among an unknown quantity of readers.'
>
> Quite cheerfully now, Flavia said, 'You forget that I am a writer. Writers don't just write it down. They have to give it a form.'
>
> He said, 'Well, do.'
>
> 'Life is often too...peculiar for fiction. Form implies a measure of selection.'
>
> He pleased her by catching on, 'At the expense of the truth?'
>
> 'Never essentially. At the expense of the literal truth.'
>
> 'Does the literal truth matter?'
>
> She thought about that. 'To the person to whom it happened.' (Bedford, 1968, pp. 18-19).

Interpretation of text in context

The hermeneutic model for the process of achieving understanding by relating the part to the whole is the interpretation of texts, a model which derives from the seventeenth century practice of biblical exegesis. The tape-recorded interview conversation can be treated as a text which is interpreted in the context of the research process in general and the event of the interview in particular.

As mentioned above, the hermeneutic method begins with the consciousness, or prejudice of the researcher, and is therefore a matter of perception. To treat the event of the interview as context the researcher must be able to operate the phenomenological reduction, in the Husserlian sense (Husserl, 1965). The practice of the reduction requires an ability to make problematic the world of every day life, or the world taken-for-granted.

One way of creating an awareness of the phenomenology of the event of an interview is to think about it in dramaturgical terms. All sorts of clues as to what was 'really' going on in the encounter become apparent if one analyses the interaction in terms such as staging, role-playing and dramatic inter-play. One can generate questions which produce insights as to the nature of the event by thinking about such things as the dynamics of the conversation, the dramatic structure of the scene, the use of space, the feeling tone and the kind of language and gesture used. Was there evidence of scene-setting? How did the 'actors' dispose themselves? What were the seating arrangements? What roles were assumed? Did the situation seem natural or contrived? What were the dynamics of the conversation in terms of initiating new topics, turn-taking and interrupting? To what topics did the interviewee lead the conversation? Did the interviewee take an active or passive role? What do dramaturgical elements such as body language, and the use of space, reveal about power relationships? Was the demeanor deferential or assertive? What was the dramatic structure of the encounter? Was there a sense of completion? Did the interview end abruptly, or was there evidence that one participant was reluctant to finish it? Did the conversation continue after the recorder was switched off? What was the off-the-record conversation about?

The interview as text

Ricoeur distinguishes between spoken conversation and written texts. A written text is a work, a structured totality produced in accordance with a series of rules which define its literary genre (Ricoeur, 1981, pp. 131-145, 146-165). Bedford makes this point in the passage from *A Compass Error* quoted above:

> Flavia said, 'You forget that I am a writer. Writers don't just write it down. They have to give it form.'
>
> He said, 'Well, do.'
>
> 'Life is often too...peculiar for fiction. Form implies a measure of selection.'

Nevertheless, there are arguments for considering the conversation which takes place in an interview as a text. Whereas spoken conversation is normally an ephemeral phenomenon, the use of the tape recorder enables the spoken content of the conversation to be captured and transcribed into a written form. Whether this transcription of the conversation then constitutes a text in the sense defined by Ricoeur is arguable, but there are certainly some senses in which it can be regarded and treated as a text.

Ordinary conversation can be regarded as a text in that it is produced by the work of the participants who employ the culturally determined rules and conventions which they perceive to be appropriate for the given situation. Phenomenological sociology reveals that learned procedures and conventions are routinely employed in everyday social interaction. The conscious elevation of such rules to the status of an art form is evident in the etiquette of 'polite' society, and in literary genres which reproduce the art of conversation such as the novels of Jane Austin or the plays of Oscar Wilde.

The argument for regarding interviews as texts is supported by Mishler (1986) and Paget (1983) who both define the interview as a discourse, jointly produced by the participants. Beginning with a concern for contextual effects, Mishler examines the way meanings emerge and are shaped by the developing discourse of the interview and identifies narrative elements in interviewee accounts. Paget explicitly refers to the record of the interview conversation as a text. She supports her argument with detailed examination of the transcripts of an interview and shows how the form and quality of her responses help to shape the interviewee's story, thereby demonstrating the process of the co-production of meaning.

Ricoeur's work on the reading of the text of the dream in *Freud and Philosophy* (1970) is also relevant to this discussion of the research interview transcript as text. Both Ricoeur and Habermas (1972) examined the relevance of the relationship between therapist and analysand in psychoanalysis as a model for the researcher- subject relationship. Ricoeur points out that the text for interpretation in Freudian analysis is the text of the dream *account* as well as the symbolism of the dream itself. To the extent that the research situation is analogous to that of analysis, the client's dream is analogous to the student's story:

> But the model of a 'text' can be extended. It can include, as well as the recounting of a particular dream, the whole life experience of the analysand, as finally expressed and clarified. It can also include the total work of 'reading' (or understanding) performed by the analyst... The model of the text serves to show up the part played played by both the 'author' (here the analysand) and the 'reader' (Dunphy, 1980, p. 97).

Taking an informant's story told in interview as analogous with the text of the dream account in analysis, and applying Ricoeur's approach to interpretation, it is possible to avoid the hermeneutics of suspicion by accepting that the focus of attention is the story, not the person who tells it:

> What must be understood in a story is not first the one who speaks behind the text, but that which is spoken about, the *subject matter of the text*, that is, the sort of world that the work lays out in front of the text (Ricoeur, 1978, p. 53 original emphasis)

An important difference should be noted between the treatment of a written text as a work of art, and a research interview. This difference involves Ricoeur's concept of distanciation. In Ricoeur's terms, 'writing renders the text autonomous with respect to the intention of the author' (1981, p. 139). In other words, the text takes on a life of its own, and has meanings which are independent of the subjectivity of its author. It 'opens itself to an unlimited series of readings, themselves situated in different socio-cultural conditions' (1981, p. 139). However, in the hermeneutic situation of the research interview, while the transcript of the interview does constitute a text, for the purposes of the researcher/reader who makes the initial interpretation, it cannot be treated as emancipated from the interlocutors and circumstances of the dialogical situation.

To the extent that transcripts are read by other readers, such as the interviewees or readers of the research report, then distanciation does occur, but the researcher's task requires that the text of the interview be considered in the context of the dialogical situation (Douglas, 1985, Mishler, 1986). Such an interpretation should reveal both the subjective meanings of the participants and the extent to which meanings are shared. In this respect the interpretive process resembles more closely the earlier hermeneutics of Dilthey and Schleiermacher. It has been argued above that the ability to make such an interpretation depends to some extent on the researcher's appreciation of the interview as an artefact. Traditional or conventional approaches to the research interview are deficient in this respect and are 'naive' in the Husserlian sense.

Interpretive method

Essentially a hermeneutic interpretive process involves an intensive working with the material, mentally immersing oneself in the worlds created by

the informants' stories, until the meanings behind the words emerge. Few detailed descriptions of the techniques involved are given in the literature on interview methodology, though the process can be recognised in some accounts:

> The very process of recopying the women's words, reading them with our eyes, typing them with our fingers, remembering the sounds of the voices when the words were first spoken helped us to hear meanings in the words that had previously gone unattended. We moved back and forth between these excerpts and the unabridged interviews. This enabled us to maintain a dual perspective, hearing the statements as exemplars of a particular epistemological position but hearing them also in the context of the woman's whole story. Slowly we were able to hear how differently each theme was construed by women with different ways of knowing (Belenky and others, 1986, p. 17).

This method of interpretation is holistic in that each part of the interview text is considered in relation to the whole, and an attempt is made to find a unifying theme which expresses that whole. The interview is regarded as a fabric of integrated webs of meaning. Paget's (1983) interpretive method is propelled by similar concerns for preserving the integrity of the fabric:

> Most commonly, interviewing material is coded and reconstructed even more radically. It is quantified. And the form of the quantification is then again reworked, in an analysis of variables, the statistical outcomes of which are finally reported. But the outcomes reported do not permit seeing through the construction of the data to the phenomena, the things said...
>
> The task of a science of subjective experience is preserving the essential features of the subject matter in context. This means first preserving speech as dialogue and discourse. Second, it means continuously caring about the meaning of what is said and expressed. An answer is not an entity - a thing. An answer is a spoken response. Its meaning is not constituted in advance but in its course, and, in its course, it projects specific, contextually grounded, and interactional contents. Here answers stumble and slide into memories, associations, and reveries; and questions poke gently at perplexities (Paget, 1983, pp. 87-88).

Deep levels of understanding and the intuitive discernment of characteristic patterns, or essences, to use Husserl's term, can be reached if interviews are interpreted by means of such an intensive, hermeneutic method. The intuiting of essences is based on an assumption that such patterns are encoded in everyday behaviour and are immanent, if not explicit, in a singular event such as an interview. This idea may be compared to the structuralist concept of the relationship between the absent totality of 'langue' and the expression of 'parole' (Giddens, 1987, p. 61). Gibson explains it thus:

> The relationship then of *parole* to *langue* is one of *presence* to *absence*... The existence of *langue* is implied in every speech or writing act, in

> presences, as the words are heard or seen; but it is understood in *absences*, through the rules of language which are never fully made manifest (Gibson, 1984, p. 17 original emphasis).

Ethical implications of interpretive method

The philosophical differences between positivist social science and those methodologies which reflect an alternative paradigm hinge on the issue of objectivity, which is a recurring theme in phenomenology, hermeneutics, and critical theory from Husserl, Heiddeger and Schutz to Gadamer, Ricoeur and Habermas. The ontological separation of the observer from the observed is implicit in positivist research methodology, whereas the reflexivity of the research act is asserted by phenomenological social scientists (Douglas, 1985; Johnson, 1975; Silverman, 1972); critical scientists in education (Carr and Kemmis, 1986) and by many feminist researchers (Cook and Fonow, 1986; du Bois, 1983; Klein, 1983; Kirkup, 1983; Reinharz, 1979; Rich, 1979; Spender, 1981b; Stanley and Wise, 1983).

Feminists have been particularly concerned about the quality of relationships in the research situation, condemning conventional methodology as depersonalising, exploitative and patronising (Laws, 1978; Mc Robbie, 1982). Stanley and Wise explain:

> Feminism either directly states or implies that the personal is political; that the personal and the everyday are important and interesting and must be the subject of feminist enquiry; that other people's realities mustn't be downgraded sneered at or otherwise patronised; that feminists must attempt to reject the scientist/person dichotomy and, in doing so, must endeavour to dismantle the power relationships which exist between the researched and researcher (1981, pp. 101-102).

Because it is based on a theory of inter-relatedness rather than an ideal of objectivity, hermeneutic method restores the personal dimension to research relationships. However, such relationships are complicated by ethical problems because hermeneutic interpretation involves the revelation hidden meanings. Meaning becomes problematic once one is aware of the possible presence of deliberate deception, misunderstanding, ambiguity and self-deception (Douglas, 1985; MacDonald and Sanger, 1982; Tripp, 1983). Participants may not be candid, or they may convey messages of which they are not consciously aware. The search for meaning therefore requires the assumption of a critical attitude towards the data. It may involve actively searching for evidence of masking and camouflage, and being alert for instances of ambiguity, incongruity and contradiction. The use of such methods raises issues about the invasion of privacy, confidentiality and the ownership of meaning. The researcher must attempt to reach a level of interpretation which satisfies the complexities of the data without doing violence to the relationship with participants.

Ricoeur's distinction between the hermeneutics of suspicion and the hermeneutics of faith offers a guide to this dilemma:

> According to one view of this conflict of interpretations, heremeneutics is construed as the restoration of a meaning addressed to the interpreter in the form of a message. This type of hermeneutics is animated by faith, by a willingness to listen, and is characterised by respect for the object as a revelation of the sacred. However, according to another view, hermeneutics is regarded as the demystification of a meaning presented to the interpreter in the form of a disguise. This type of hermeneutics is animated by suspicion, by a scepticism towards the given, and it is characterised by a rejection of that respect for the object granted by the hermeneutics of faith. In the opinion of Ricoeur, it is the latter type of hermeneutics that is practised by Marx, Nietzsche and Freud (Thompson, 1981, p. 46).

Defining hermeneutics as the restoration of meaning is not to deny the fact that perception is filtered by subjectivity. Rather, it emphasises the researcher's responsibility for self-knowledge (Reinharz, 1979, p. 356; Stanley and Wise, 1981, p. 162). Only through the hermeneutic insight that all understanding is essentially self-understanding can the hermeneutics of faith be achieved. In this way the separateness of individuality is subsumed by incorporation into ever-widening horizons of meaning.

Conclusion

The question of the relevance of such a philosophical and methodological basis for research in distance education opens up an area of debate which is beyond the scope of this paper. However, by way of providing, in true hermeneutic style, an introduction to the next cycle, some of the issues are briefly outlined and a preferred position indicated.

Essentially hermeneutic interpretation means listening for the message of the text, that is, the story being told. Implicit in the advocacy of such a research approach in education is the belief that it is important and worthwhile to discover students' stories. While this appears to be self-evident in my view of education, some of the debates which take place in the literature of distance education indicate that in this field, such a belief is more likely to be regarded as problematic than taken for granted.

Having a research interest in students' individual perspectives is consistent with a view of distance education as a guided didactic conversation (Holmberg, 1980), with Sewart's (1981) understanding of the student experience, and with the definition of the learning process as a dialogue (Evans and Nation, 1989b). However, it would appear to have little relevance for those who prefer to adopt Peters's (1971) industrial model of distance education which defines the educational enterprise as the large-scale pro-

duction of instructional packages for the consumption of masses of students. The logical application of the industrial metaphor to research on students (ie., consumers), produces market research, which is premised on behaviourist and positivist theory.

If, however, one adopts a philosophy of education which accords respect for students as active agents in their own learning and adopts dialogue as the metaphor for the teaching-learning process, (Evans and Nation, 1989b), then distance education presents certain practical problems, because it entails the relative isolation of teacher and learner. For effective dialogue to be initiated with off-campus students the teachers need some understanding of the experience of such students not only as students but also as adults in particular life circumstances (Nation, 1985). My own interest in the methodology of interviewing developed initially out of the experience of attempting to communicate in the form of a regular newsletter. The idea of interviewing a small sample of students at home was a response to the feeling of being 'out of touch' (literally and metaphorically) with my readers. I decided that in order to communicate effectively I needed a more realistic conception of their personal contexts. Similar problems can affect the writing of course materials, the conduct of telephone tutorials (Grace and Thompson, 1989), and, of course, personal counselling at a distance.

Given the value in understanding students' perspectives, it may still be objected that there is a problem around the issue of generalisability. How can relatively small scale, intensive studies of the illuminative kind described above assist the distance educator who must communicate with a large and diverse population of students. Discussing a feminist model of evaluation which she developed at the UK Open University, Kirkup addresses this issue as follows:

> The assumption contained in the evaluation I have done, using in depth qualitative data from a small sample, is that if I am to understand the experience of the sample and describe it in appropriate language it will resonate with the experience and understanding of others involved... It will be 'meaningful' rather than 'true', and although perhaps not generalisable in the research sense, it will allow others access to the experience of those in my sample in such a way that it will contribute to such others gaining insight into their own situations (1983, p. 24).

Readers of Belenky and others' (1986) insightful construction, from interview material, of theories about women's ways of knowing, or of the analysis of secondary education in Australia which Connell, Ashenden, Kessler and Dowsett (1982) derived from family case studies will recognise the validity this position.

It is clear from the literature reviewed above that qualitative researchers in sociology and education share with feminists a concern for the problematics of meaning and subjectivity. Such concern is more frequently

expressed as critique of 'mainstream' or 'positivist' theory and practice, rather than being located affirmatively in the ancient tradition of hermeneutic thought, although the latter could provide a philosophical 'home' of considerable sophistication. Similarly, in the field of distance education, the application of hermeneutic theory to research could inform and enrich the construction of knowledge about students and their learning experiences.

Chapter 4

Putting theory into place: developing a theory-based comparative research project in distance education.

Terry Evans

THE THEORETICAL FOUNDATIONS of much research in distance education are usually implicit and rendered, by default, as unproblematic. Yet one can argue that all research, including within distance education, relies on theory for its method, analysis and communication, and that the adoption of any particular theoretical position raises problems of ideology, methodology and interpretation. It might be argued, rather prosaically, that everyone engages in theorising - the process of constructing and re-constructing explanations for phenomena, events or behaviour - in some form and on some occasions throughout their lives. But *real* theories - the ones that shape and form the substance of academic and intellectual discourses - are not just explanations, they represent comprehensive frameworks of *ways of knowing* that can lead to a transcendance of thinking within or across academic discourses. Of course, theories vary considerably in their sophistication, detail and expansiveness, and some of the *grand* theories, such as those of Marx and Freud, seem to be able to mutate through history - with a little help from those in the present - to explain, for some, the contemporary conditions of humanity.

Some of distance education's longstanding scholars - Holmberg, Peters, Bååth etc[1] - have wrestled with various theoretical propositions in their quest to explain the structure, nature and processes of distance education. However, a good deal of research in distance education has been less concerned with theory than with producing data. Indeed, distance education is occasionally criticised for being atheoretical, even to the extent that some debate whether or not distance education can be considered as a discipline unless it develops a more substantial core of specific theory and research.[2] But really the point is not so much the absence of theory in distance education - as opposed to theories of distance education - but rather that the theoretical positions which are embodied in distance education research and writing are not regularly articulated, understood and critiqued. In fact, the covert nature of the theoretical and ideological positions of some writing on distance education needs to be understood in the context of its subtle driving of distance education further along the road to *instructional industrialism* (Evans and Nation, 1987a). However, this paper is about a research project which *puts theory into place* in distance education, although the project itself was not designed specifically to counter the criticism of atheoreticity mentioned previously.

The project stems principally from my teaching and research work in sociology which has led me to engage the work of Anthony Giddens who has produced volumes of work on social theory in the past decade or more (see, for example, Giddens, 1984; 1987). Giddens has managed to chart a path through the main sociological perspectives and develop what he calls a theory of structuration; that is a theory about why and how social structures are constructed and reconstructed through social life. I have been particularly interested in gender structures (see, for example, Evans, 1988) which, until recently (Giddens, 1989) were an important aspect of social life which Giddens had not addressed in any substantial way. For over a decade I have been involved in distance education and for the majority of this period I have been involved in research and writing within what might be called a 'sociology of distance education'.[3] In more recent times, the work of Giddens has led me into a new line of inquiry within distance education which seems to be particularly fruitful, both for scholars of distance education and, possibly, for some outside of this field.

A key aspect of Giddens's work is that he moves beyond sociology to seek out theoretical links with other disciplines which will elaborate and strengthen his own position. In this respect it is his links with some of the social geographers, especially those who work within a framework of critical human geography, which seem powerful for distance education. Giddens makes the point that:

> Most social analysts treat time and space as mere environments of action, and accept unthinkingly the conception of time, as mensurable clock time, characteristic of modern Western culture. With the exception of the recent works of geographers....social scientists have failed to construct their thinking around modes in which social systems are constituted across time-space (1985, p. 265).

Giddens's argument had a substantial effect upon my own thinking, probably for two main reasons: I had studied geography as an undergraduate and, although some of the recent work in geography was unfamiliar to me, I found it pleasant to immerse myself in the literature again; as someone who was working within distance education, the issues of time and space, or time-geography as it is often called, began to resonate with some of the contemporary practice, research and theory issues in distance education.

One of the issues which has surfaced in the distance education literature has been, what Daryl Nation and I have called, 'definitional disputes' over the various forms of nomenclature used within the field (Evans and Nation, 1989b:37; see also, Rumble, 1989; Nation, Paine and Richardson, 1990). However, although my work could have an impact on these matters of definition by bearing on the adjective 'distance', my interest was not to weigh into the definitional disputes. Rather, my interest was to focus this new body of sociology and geography on *distance* in distance education. The intention is to make distance problematic and to embark on an inves-

tigation within distance education which both uses and tests some of the theory from sociology and critical human geography. In this way, it seemed possible that not only could sociology and geography make a contribution to distance education, but also there may be some contribution back from distance education to these other disciplines. However, it is distance education which is the immediate concern here.

It seems to me that distance educators are confronted regularly with problems of distance and yet there is often an omission of this recognition in the rhetoric and advertising material which flow from various sources. One could be forgiven for seeing distance education as a ubiquitous educational rain soaking into the country; a country parched and cracked from years of educational drought. The reality is that the distance educational precipitation is concentrated into prolonged rains in certain cities and capitals, occasional showers elsewhere and with a run-off which trickles its way inland to the parched interior. The remote and isolated students have to wait and pay for this distance education run-off from the cities; it does not come as readily or as cheaply as it does for the city students. Although we have, at least in developed nations, transport and communication links which enable us to reach and communicate with remote locations, there is often a cost, availability and/or time differential which can impede the learning of distance students. The problems of distance are far greater within distance education in developing countries where communication and transport services are not as regular, available or refined. This is not to say that distance education does not work: it clearly does. However, the nature of the learning relationship between distance students and their teachers is affected by distance.

In a piece of research into Victorian primary school teachers improving their qualifications through distance education, Nation and I found that the two most important reasons for the teachers choosing to study at their particular institution were, equally, that the institution offered the course off-campus and that it was their nearest institution (Evans and Nation, 1987b). This seemed to be a contradictory finding and yet, it does make sense to choose your 'local' institution, even if it is two hundred or more kilometres away. This is because distance does affect physical access to an institution; the closer it is the quicker, cheaper and easier will be the journey. Telephone costs are also reduced and even the post will be quicker for those crucial assignments.[4] There are also other important social, historical and cultural factors which may be worthy of inquiry, as my research set out to discover, because the more one thinks about distance the more it becomes a far from linear concept.

In a recent article (Evans, 1989), I discuss some of the ways in which place and distance are theorised in sociology and geography. I argue that:

> ....*distance* needs to be introduced (within distance education) as a concept which bears upon not only our concept of *place* but also upon

> relations between them. These relations are not just measures of distance or types of terrain, but also they include the nature of transport and communications, the political and economic links and, perhaps most significant, those historical and cultural conditions which form the places in question (p. 172).

In addition, I suggested that the complexities of *distance* are recognised in some respects in distance education:

> It is generally accepted that other 'distances' (than spatial) are bridged by the expanding numbers of distance education institutions and systems worldwide. Such 'distances' may relate to spatial ones, and each does have its own spatial context and relations, however, the principal features are concerned with the temporal, social and economic. Hence, not only students who are spatially remote from educational provision are served through distance education, but also those who have work, family or financial or disability difficulties (p. 173).

However, there is a need to press on further with the analysis of theories of time-geography through research in distance education. Although this should help produce a better understanding of the interrelationships between the nature and consequences of distance education and the lives of students distributed throughout a geographical area, it should also be a useful testing ground for the theories themselves. Hence, research in distance education may contribute to the knowledge and understanding about time-geography itself.

In the following sections of this chapter I shall outline some of the key features of theories in time-geography and make some links with between these features and distance education. These links provide the basis for forming research questions in distance education which contributed to the establishment of a research project which I conducted beginning in mid-1988. The final section of this paper explains the nature and design of the project itself. The findings are not discussed because 'that's another story', and the purpose of this paper is to demonstrate how theories from outside distance education can lead to research within the field.

Time-Geography

Berger and Luckmann (1967) in their treatise on the sociology of knowledge argued that what we see as the 'objective reality' which forms our everyday lives is a product of complex process of social construction. Although they were not much concerned about space - 'the spatial is quite peripheral to our present considerations. Suffice it to point out that it, too, has a social dimension...' (p. 40) - they were much more concerned with time or 'temporality' - 'Temporality is an intrinsic property of conscious-

ness. Every individual is conscious of an inner flow of time, which in turn is founded on the physiological rhythms of the organism though it is not identical with these '(p. 40). They saw that there was a fundamental temporal sequence to an individual's dialectical relationship with society (p. 149), but it was Giddens who argued, some years later, that it was the spatial *and* temporal situatedness of social life which needed to be recognised as crucial (Giddens, 1984 p. 110).

The interrelationship between space and time becomes quite clear when one reflects on the ways in which the distance (space) between places are 'measured' in contemporary circumstances by the time it takes to travel or communicate between those places.[5] Certainly, distance measures mean something, but it is the means whereby we can tackle such distances which is one of the key elements shaping the ways we understand the distances. So, in distance education, if there is access to good telephone technology, then the consequences of the distance between students and their tutor are ameliorated, or perhaps, rather the distance relations are reshaped by this form of communications technology itself. But distance is still important, because it affects the costs involved and can affect the time-zones in which calls are originated and received. However, if there is not access to good telephone technology, as is the case in many developing countries, then this particular 'enemy of distance', as Blainey (1966) calls transport and communications technologies, is not present. This terminology by Blainey is taken further by those who work in the transport and communications businesses as they peddle their latest ways of 'conquering distance' or 'shrinking the globe'. Adams (1972) has argued that developments in these fields are not neccessarily worthwhile and, indeed, are usually only of benefit to the rich and powerful as they seek to extend their control over natural and social life.

One of the most influential contemporary social geographers is Torsten Hägerstrand who has developed ways of studying the interrelationships between human movements in space and time and the physical (natural and built) environment. Individuals' daily movements in space can be seen as reflecting their capacities for movement - affected by their physical capabilities, wealth, power etc - and their intentions as human agents. Human lifetime is a series, a 'life-biography', of such daily movements which contain well-trodden paths, occasional journeys and unique visits. A simple point here is that distance education emerged because for many people their regular 'life-paths' cannot readily accommodate the time-space movements required to undertake on-campus study. However, the work of the time-geographers provides a more elaborate framework which may be applied to analysing distance education.

Giddens describes clearly how Hägerstrand's three main forms of time-space constraints can be used to interpret and explain how people are are organised in time-space (1989:108-111). These three constraints are as follows:

- *Capability constraints* are those which stem from the physical capacities and needs of people. Basic needs for food, shelter and sleep constrain the ways in which time - space movements can be made. For most people this means that the time-space relationships which exists between home and work, school, retail and other services need to be ones with which they can cope. Hence, where the time-space relationship between home and educational provision is impractical then a variety of solutions are used to enable people to cope: some country children attend boarding schools; the armed forces provide schools near foreign bases; and some station children have a resident tutor ('governess'). But often the solutions fall within what we might call *distance education* . 'Schools of the air', correspondence courses, external studies are all forms of education which attempt to overcome the capability constraints of people in certain locations or circumstances. Physical disabilities are usually seen as *disabilities* because of the additional constraints they impose on a person's capability to move in time-space. Forms of distance education are often seen as suitable for improving such people's access to educational services.

- *Coupling constraints* refer to those limitations on interactions or meetings between people. Organising a meeting or seminar concerns providing a set of circumstances in which people are able to coordinate their daily life-paths with those of others. This means that the capacity of a location to 'pack' people together,[6] and to provide for their physical needs for sustenance, shelter etc, and the capacity of the transport facilities to move people to and from the location and their homes are important constraints. One can see that on-campus education is considerably affected by *coupling constraints* and that the provision of facilities and transport services is often an important part of maintaining on-campus education. For example, school buses, university cafeterias and job-release time, are all solutions to the coupling constraint problems in different forms of educational provision. In distance education the viability of regional tutorials, summer schools, or weekend schools is affected by the coupling constraints which obtain. In addition, forms of 'real time' communications are affected by coupling constraints, because such constraints are not just about location or place, but also time. Therefore, a teletutorial's viability is affected by the participants' capacity to be in a designated place (i.e.where there is a telephone) at the appropriate time. Even 'delayed time' forms of communication such as electronic mail, post or facsimile are similarly affected by coupling constraints, because there are time-space requirements to 'access' each of these forms of communication and,

although there are not 'packing' constraints imposed through, say, students needing to be in the same place, there are such constraints at each 'access' location. For example, if electronic mail has to be used through a home computer, modem and telephone link there may well be time and space constraints on access to the equipment, electricity and appropriate telephone connections.

- *Authority constraints* are the sorts of limitations which have been the grist for sociological mills for decades: power and its various economic, social and political ramifications. Power can be seen to be reflected in peoples' scope to choose to live, move and occupy where and when they want. Giddens (1985:271) makes the point that Hägerstrand's notions of power are 'vaguely formulated' and ignore its generative nature. *Authority constraints* can be extended to include gender and class which can have substantial effects on a person's capacity to control their or others' occupational and other movements in time-space. Distance education, in some circumstances, can be seen to shift some of the *authority constraints* pressing on people by virtue of their class and gender positions. In effect, *authority constraints* on time-space relations are enacted through the previously outlined *capability* and *coupling constraints.*

Hägerstrand's time-space constraints provide a framework for commencing an analysis of distance in distance education, however for me, such a framework belies the complexity of time-space relations in social life and it is Giddens who proceeds towards explaining this complexity and its relationship with social structures, or more specifically with theories of structuration. Giddens is explicit that communities, societies and social life obviously take place in time and space and that social theories need to take account of these elements; I would argue similarly for theories of distance education. Giddens (1985) uses the terms 'co-presence' (people present together in time and space) and 'presence availability' (the ability to be available, to be resent at a given time and place) to describe two of the fundamental characteristics of time space-relations in social life. He suggests that:

> Communities of high presence availability in *all* cultures, until as recently as a hundred years ago, were groupings of individuals in close physical proximity to one another. The corporeality of the agent, the limitations upon the mobility of the body in the trajectories...of daily activity, together with the physical properties of space, ensured that this was so. The media of communication were always identical to those of transportation. (1985: 275-6, original emphasis)

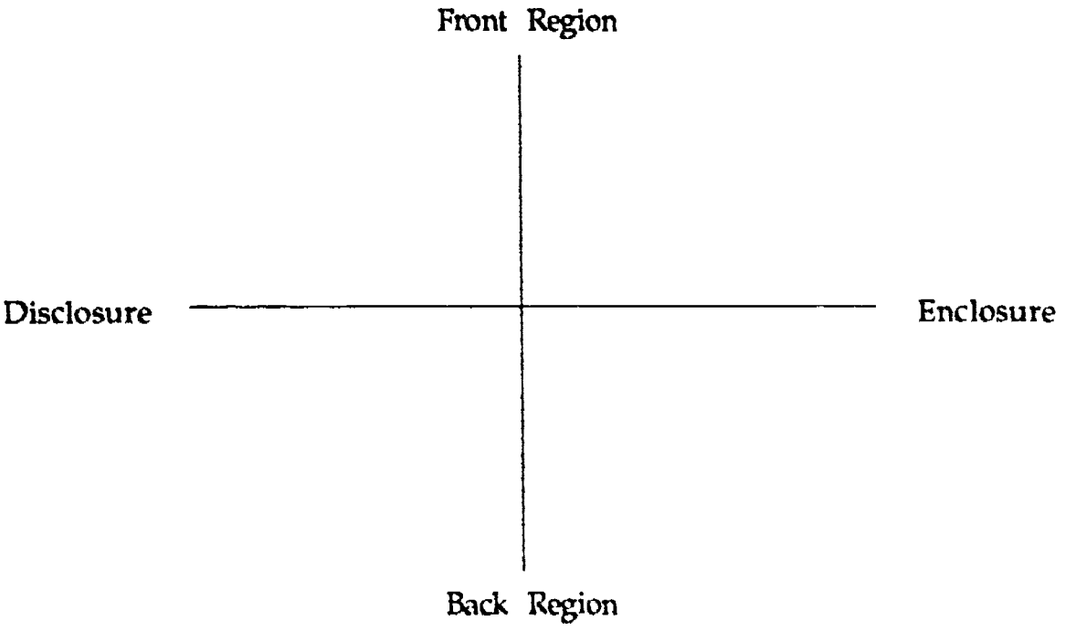
For Giddens, it was the electromagnetic telegraph which produced as large an impact on human culture as any other invention. It was this and other subsequent forms of transport and communication developments which led to what has been called 'time-space' convergence. Those of us who use telephone, facsimile, electronic mail and other forms of communication media within distance education can attest to such a time-space convergence. But this is not a simple, linear form of convergence whereby, each new development in the technology leads to another incremental time-space convergence. Clearly the requirements of co-presence and presence availablity differ between the forms of technology. An advantage of electronic mail, even though it is usually dependent on telephone lines is that it not only does not require co-presence (as neither does the telephone) but the presence availablity does not require the sender and recipient to be available simultaneously (which the telephone does). However, the nature of the dialogue is quite different between email and telephone.

Returning to Hägerstrand's three forms of time-space constraint, they can be seen to apply to any set of time-space relations in whatever state of convergence, therefore, the use of a new form of communication or transport technology in distance education will have a range of consequences for the people involved. Conceivably, the nature of such technology and its adoption within distance education could have a convergence effect in relation to some students, but could have the opposite or a null effect on others. For example, a requirement to use email could necessitate attendance (presence availability) at a particular place (computer terminal) which may reduce or remove the opportunity for the student to meet another nearby student.

Giddens makes links between time-geography and interactionist sociology. He draws on the work of Goffman (1959) to show that time-space relations exist within the most intimate personal encounters and that such social life is regulated by 'ritual forms of conduct and utterance' (1985: 277). The organisation of spaces within the home reflect the social rules about co-presence and presence availability which shape the inhabitants use of space-time. Of course, for most distance students, their studies intervene into their home circumstances and affect their time-space relations therein. In addition, the nature of presence-availability and co-presence is likely to be reshaped as the students attempt to impose their own spaces and times for study within their homes. This is often most profound for women where the authority constraints can be such that the power to control these aspects of even their home lives is circumscribed by gender relations.

Giddens suggest that the analysis of time-space can be related to 'psychological distancing' through the interrelation of 'two axes of regionalisation' (1985: 277). Figure 1 shows Giddens's two axes:

Figure 1 Zoning (Giddens, 1985: 277)



Giddens argues that 'regionalisation encloses zones of time-space' (1985: 277) which can be enclosed (hidden from public view) or disclosed (made public) by the individual concerned. Front regions are those which represent the circumstances and nature of encounter with others and back regions refer to those circumstances where the individual can 'sustain their ontological security'. These two regions are not just social or geographical contexts but also psychological; and the enclosure or disclosure is an element of human agency. It may be argued that a crucial difference between distance education and face-to-face (co-present) education is that they generally occupy different zones of time-space. Face-to-face education is located in the 'front region', the public sphere of personal and social life. Distance education is located in the 'back region' of social and personal life. This seems to be an important difference which is worth exploring in research because we can see that the distance student is required (or do they volunteer?) to bring their education into the back region of their lives, that is, into the part of themselves and their social worlds which they usually enclose as private. Of course, the nature of the distance education 'package' is that, unlike the tutor on-campus, it cannot 'see' anything from the students' private worlds, but it is an intrusion (or welcome 'guest') in that zone. This is perhaps more significant when one thinks of the forms of media in distance education which require particular forms of presence availability, for example, watching a video or, especially, participating in a telephone tutorial (see, Chapter 14 by Diane Thompson) or radio talk-back (Arger, 1989a). In these cases the student is required to do particular things in their 'back regions' which may run counter to their usual patterns of disclosure and social life. The example of those women who study in families resistant to such work represents a case in point.

Giddens's argument becomes ever more complex as he relates the regionalisation of cities, organisations and communities to the zoning of activities in daily life. Those who know of Giddens's work will recognise his drive to understand and explain how social structures are constructed and reconstructed through human actions. His foray into time-geography seems to have enormous potential for the development of theory in distance education, but it is not an easy intellectual project to grapple with and keep distance education in mind. However, what seems exciting to me is that research and theorising in distance education should be able to make a contribution to the marriage between sociology and time-geography, because distance education is a culmination of political and human agency brought about in order to enable people to learn in circumstances where their time-space relations make on-campus study impossible or unfavourable.

Brief description of the comparative research project

My encounters with the sorts of theories and ideas outlined above led me to design and implement a small research project as the core of a six months sabbatical leave from Deakin University for the last half of 1988.[7] The project was conducted in Victoria, Australia and in Wales with 'experienced' (i.e. not first year) Deakin University and Open University (OU) undergraduates, respectively. Forty students were selected: twenty from each country, half of whom lived close to their educational institutions, i.e. Geelong and Cardiff, and half of whom lived 'remote' from their institutions. The remote Deakin students were from western Victoria and the remote O U students were from mid-Wales. The interview samples were selected from four panels of potential students (local Deakin, remote Deakin, local OU, remote OU) in order maintain a representative balance of sexes, ages and courses.

Apart form the analysis of University records, the data were collected by means of detailed, semi-structured interviews. The interviews were tape-recorded and transcribed. Most interviews were conducted at the students' homes, but a few were conducted at workplaces or at the OU offices. The interviews covered several major themes, each of which was open for the students to discuss in their own terms. These themes covered such matters as: their educational biographies up to becoming a distance student; their becoming and experience as distance students; their home, work and family lives; and their time-geographic experiences. This latter theme was designed to explore the daily and other periodic journeys of the students. In particular, the sorts of journey which their studies had necessitated, encouraged, prevented, restricted or otherwise made them change their views about.

Each of these themes is then open to analysis in terms of the aforementioned theories in relation not only to being distance students, but also in relation to home location, gender, class and international comparison. Part of the research project also involved the collection of basic statistical information about the student populations from which these students were drawn. In addition, certain other 'key' people were interviewed (tutors, counsellors etc) and documents were collected in order to assist in the interpretation of the students' accounts.

The analysis and writing-up of this research is continuing and will be produced in various forms for publication and dissemination. This paper represents the third 'product' from the project to date (see Evans, 1988b; 1989). However, the large task is to explore the data in terms of the theories of time-geography and social structuration. In a sense this will take the project back to where it all began, but if we accept Giddens's notion of a 'double hermeneutic' (1984: 374), this will be with a different frame of meaning; so it may not seem quite the same place at all.

The comparative nature of the research, across both the Australian/Welsh and local/remote divisions, was designed to give the opportunity to compare and contrast the differences between and within these divisions. However, class and gender (race or ethnicity hardly surfaced which is an interesting feature in itself) are important social structural divisions which are also available and important for analysis. Both class and gender, are important constructs in the analyses of some of the critical human geographers upon which the theoretical orientation of the research was based. It is hoped that the richness and complexity of the data collected will provide several different, but related, frames of analysis which will contribute, not only to the understanding of distance education itself, but also to beginning a formulation of a theory of distance education which explains it in social and political terms, not just in educational ones. It seems the potential is there to say something about geography - and the 'geography of distance education' - as the forms of time-geographic relations in the study are explored.[8]

Acknowledgement

I am grateful for the specific comments Nicholas Flower and Daryl Nation provided on the original paper presented at RIDE'89 and which have been incorporated into this chapter.

Notes

1 A good source of references to the literature produced by such scholars in distance education is in Holmberg, B. 1985.

2 Note debate in the *Journal of Distance Education*, 1988.

3 Over the decade in question, Daryl Nation has been a colleague in several joint writing,

research and teaching projects. Our collaborative work has been important to my conceptualisation of the present project.

4 Central Place theory in geography can explain some of these relationships.

5 Since I began thinking about the relationship between sociology, geography and distance education I have encountered Stephen Hawking's book, *A Brief History of Time* (1988). Whilst it draws together ideas from cosmology and quantum theory, it is the history of popular beliefs about time and their relationship to changes in scientific knowledge and theory which remains a strong thread throughout the book. He draws a distinction between 'real' time and 'imaginary' time: 'imaginary time is indistinguishable from directions in space. If one can go north, one can turn around and head south; equally if one can go forward in imaginary time, one ought to be able to turn around and go backward.' He poses the question, 'Why do we remember the past and not the future?' Here I am not proposing that we need to do more than recognise that 'real' time is itself a social construct and that equating distance with travel or communication times is still problematic.

6 'Packing' is a theoretical construct in geography which Carlstein (1978) has explored at some length. Giddens (1985:269) also has described his work.

7 I am grateful to Deakin University for granting me sabbatical leave and for the provision of a research grant. I am also grateful to the UK Open University for granting me a Visiting Research Fellowship at the Open University in Wales in order to complete the British component of the research.

8 If there is anyone else interested in this area of research and theory I would be pleased to make contact.

Chapter 5

Research and distance education in the third world cultural contexts

Richard Guy

THIS CHAPTER SEEKS to generate debate about the appropriateness of the assumptions and practices of distance education as they are presently conceived and applied in the third world. It will be argued that the ideological foundations of western conceptions of distance education dominate and that insufficient recognition has been given to the cultural contexts in which distance education is situated in the third world. A critical research methodology is suggested as the best means to explore the relationships which exist between culture and distance education and which may, in turn, suggest the formulation of more appropriate forms of distance education in the third world.

Distance education in the third world at present is problematic. One cannot readily discern theories of distance education which are appropriate to its various contexts, nor are there established distance education practices which address common issues apparent in the third world. Distance educators are unclear about the impact of distance education on the social, cultural, political and economic contexts of the third world; the role of text, so central to the conceptualisation of distance education has been left largely unconsidered; and the relationships between teachers, students and distance education institutions in terms of power, control, alienation, ownership and independence generally remain unexplored. I will argue that this has occurred, in part, because the assumptions, theories and practices of distance education have emanated from the developed world and have undergone little critique prior to their introduction in the third world. Distance education has tended to be adopted as yet another means to reduce the gap between the so-called developed and less developed countries of the world. This is not to say that the concept of distance education is inappropriate but tensions are apparent. The ideology and the consequences of present distance education practices in the third world require reflection, critique and understanding, in order that distance education may contribute to appropriate forms of development in the third world.

Ideology and distance education in the third world

Peters (1983) outlines a 'comparative interpretation' of distance education in which he said, 'I limited myself to describing the structural differences between traditional teaching and learning and distance study' (Peters, 1989, p. 5), and although he has considerable reservations about the dehumanising and alienating effects of the industrialisation of education, he adds that, 'There is no evidence that people either want or are able to resist, let alone stop, the changes that are brought about by the process of industrialisation' (p. 8). Peters's 'comparative interpretation' has been interpreted by others (Holmberg, 1985; Keegan, 1983) as a theory of distance education, although, ironically, Peters himself denies this (1989). Indeed, Sewart (1983) refers to it as 'the most impressive theoretical formulation of distance education yet developed' (p. 66), and as such it has had an overwhelming impact on the practice of distance education in the third world. It is not difficult to discern the positivist ideology which underpins an industrial interpretation of distance education, and its continuing strength has somewhat precluded serious discussion of the cultural, social, political and economic nature and outcomes of distance education (Minnis, 1985). Many third world countries have uncritically accepted positivistic claims about distance education, such as its cost advantages (Ansere, 1982), its ability to satisfy the demands of large numbers of students, who cannot otherwise be catered for in conventional educational settings, through technological innovations (Flinck and Flinck, 1985), and that it makes better use of scarce educational resources (Taylor, 1983), despite evidence which suggests that this is not always the case (Guthrie, 1987; Perraton, 1982). Nevertheless, distance education initiatives have been happily introduced in the third world, in the belief that major social and educational problems such as illiteracy, a largely untrained work force, and economic development will be solved through inexpensive, systematic, mass produced, distance education programs (Gana, 1984).

Conventional education practices have been widely critiqued over the past twenty years or so within the 'new' sociology of education (for example, Bourdieu, 1973; Whitty, 1985; Young, 1971). But distance education has mostly escaped these critiques, to the extent that the analysis by Rumble and Harry (1982) of the emergence of distance teaching universities, is a description of institutions which are mostly embedded in what Giroux (1981) describes as a technocratic rationality of education. Villarroel (1988) exemplifies the continuing strength of this rationality when he argues for the need to plan distance education universities so that 'The teaching is of a formal nature in that it uses technical means to transmit information, and two-way communication is stimulated to allow the student to consult his tutor; in addition, intensive use is made of industrial approaches for certain academic tasks and for the production of teaching aids' (p. 56). Apple (1979) has warned of the dangers in 'deskilling' teachers, and parallels can be drawn with instructional designers, who assume greater control of the production of materials, and the definition and ownership of knowledge

forms on behalf of distance students. The result is a dehumanised form of education, but distance education institutions continue to operate on the basis of 'instructional industrialism' (Evans and Nation, 1987a; 1989a).

Forms of text are central to distance education, and indeed for many students, it is *the* curriculum (Thorpe, 1979). Text in distance education not only refers to the traditional printed word but also to the knowledge forms that are derived from 'postindustrialism' (Bell, 1979) and 'informationalism' (Luke, 1983) which are driven by computer and telecommunications technology. Text is produced to solve the representational problem but the discussion of text in distance education tends to centre on issues of instructional design with some discussion of interactive text. These issues cannot be disregarded but what is lacking in the literature is substantial critique of text in distance education.

In the majority of distance programs the text is produced by course developers employed by distance institutions and is designed to be unquestioningly consumed by readers. The opportunities for control of student learning and ultimately of cultural, political and economic relationships through text are considerable in such circumstances. Control may be in the form of course writers, or a team consisting of academics and instructional designers, who make a selection of content from stocks of social and cultural capital available to them, but which may not necessarily be from knowledge stocks that are familiar to students in the third world (Guy, 1987). Control may also be in the form of multi-national publishing companies who produce and market materials for a global audience (Anyon, 1979). There are other conceptions of text in distance education, such as that which encourages interaction between the student and the teacher through text (Holmberg, 1983), and the conception that interactive text by itself is insufficient for effective learning, and requires telephone and face-to-face tutorials, workshops and study groups as additional support mechanisms for students (Bååth, 1982; Sewart, 1978). The role of the tutor in these forms of support may counter the control and ideology contained in distance education materials, but at the substantial risk of in fact increasing levels of control.

A recent initiative in distance education is the development of dialogical distance materials (Evans and Nation, 1989b; Gaskell and Mills, 1989). This approach recognises students as the key agents in their own learning by focusing on 'open texts' (Eco, 1979), which enable students to participate in the construction and transformation of text and knowledge. Alvarado and Ferguson (1983) take critique further, when they argue that text is not just a question of representation, but stimulated by Foucault (1972), and his concern for power-knowledge relationships, is a matter of a theory of institutions, as well as a theory of symbolic systems and specific signifying systems. Text represents preferred discourses and the role of text must be to 'denaturalise' the discourses of the powerful groups in society by deconstructing the dominant 'realist' discourse and identifying alternative

discourses. Such a conception may encourage appropriate and sensitive texts to be created within all cultural contexts of distance education throughout the world. Farnes (1975) has suggested that the only way students can become competent is to carry out similar tasks to those carried out by course team authors. In reality few institutions have attempted to solve the representational problem in text in innovative ways. Indeed, the development of effective forms of dialogue is one of the problematic areas of distance education.

A broad conception of text also needs to take into account the rapid developments taking place in communication technologies. The participatory view of text production may be interpreted as inefficient, expensive and problematical by the technocrats controlling the new technologies, and who are more concerned with economies of scale and industrial approaches to distance education. The trend towards an 'internationalisation' of knowledge and text through the new communication technologies should be of particular concern to those third world countries which value their cultural and social identities.

There are other issues of a sociological nature in relation to distance education such as power, control, alienation and independence which generally remain unexamined. It is desirable from the point of view of the third world to undertake greater research into these areas, to become more informed about them so that sensitive and appropriate theories and practices may be derived for distance education.

A critical view of distance education

In order to understand the cultural factors which impinge on the formulation and success of distance education programs it is appropriate to draw on a critical research tradition (Comstock, 1982). Bredo and Feinberg (1982) suggest that its rationale and procedures are best suited to exploring social and educational issues and its emancipatory ideal enables participants in research to recognise and free themselves from forms of domination and control which impinge on their practice (McTaggart, 1987; Tandon, 1988). There have been few attempts, however, to analyse distance education from a critical perspective (Evans and Nation, 1989a) and to establish the relationships between the participants in distance education and notions of power, alienation, control, authority and culture. These issues are raised in a number of studies (Arger, 1985; Nunan, 1988; Rumble, 1989) but as yet they have not been formulated into any serious discussion of the theory or practice of distance education. Some writers make observations which are critical in nature, such as Nunan (1988), who interprets distance education in terms of reproduction theory. He notes that in 1983, some 57 per cent of all students in distance education courses in Australia held some form of tertiary qualification, and draws the conclu-

sion that just as the school system provides some people with an advantage in social and economic power in society, the provision of distance education 'provides the opportunity to maintain this advantage' (p. 4). Only one major piece of work appears in the literature (Harris, 1987) which adopts a critical approach 'to launch critique at the existing accounts of distance education (principally of the United Kingdom Open University), described here under the general name 'educational technology', and to critique the actual practices of distance education' (p. 129). Harris concludes that the rationale, curriculum process, pedagogy and assessment procedures of the Open University owe much to positivist thought and argues that distance education needs to be reconceptualised in terms of its social context: 'Discussion of what might be called a social context tends to be limited - to hints of issues of political consent and relations with other rival institutions for example. Even rarer, and still rather obscure, are discussions of the 'cultural needs and customs' of different national or ethnic groups, the historical antecedents of demands for adult education, or the connections with occupational or economic systems' (p. 136). Harris proceeds to analyse the Open University in terms of its 'openness' and 'closure' in regard to students, staffing, entry procedures, course design and funding arrangements. He attempts to understand this by 'an insistence on the need to recover that totality or "social context", for "political" as well as for "theoretical" reasons' (p. 143).

Of course, these examples reflect the situation in the developed world, but there is hardly an overwhelming number of studies to illuminate this area of research. This is, in itself, a disturbing observation for it illustrates the continuing dominance of positivism and interpretive approaches to research in distance education. The literature relating to distance education in the third world (e.g. Brophy and Dudley, 1982; Young, 1980) has not been concerned with critical analysis, but rather tends to concentrate on the organisation and evaluation of programs. What is lacking in the literature of distance education in the third world is widespread debate and exploration of the relationships between economic, political and ideological cultural practices in perpetuating and legitimating inequalities in education and society, and in a wider arena between countries. For instance, control was referred to earlier on in the context of the production of text, but there is another dimension to control in distance education which is political. Houle (1974) refers to the case of South Africa, where distance education is seen as a support for apartheid, and in Colombia (Kaye and Rumble, 1981), Chile and Sri Lanka (Dieuzeide, 1985), it is interpreted as a means to disperse students as a political force. The Commonwealth of Learning may represent another attempt to influence relationships as it intends to 'facilitate staff training, to provide consultancy expertise to countries planning to make greater use of distance education, and to encourage exchanges of personnel between institutions within each region....and the cooperative development of materials for use in several countries' (Daniel, 1989, p. 161). The third world needs to monitor and critique these developments carefully but there has not been a great tradition of such in the past.

What does the existing sociological literature on distance education in the third world suggest? A number of writers endorse distance education as a means of overcoming social and economic inequalities within third world countries and between the developed and less developed worlds. Omolewa (1985) suggests that 'distance education is particularly mindful of assisting the underserved groups of people' (p.2) and goes on to claim that distance education in the third world focuses on the 'hard-pressed', the 'underprivileged' and the 'oppressed', and results in the empowerment of the individual through the acquisition of knowledge. Similarly Gana (1984) suggests that, 'Distance education provides a manageable solution for the democratisation and liberalisation of education' (p. 4). It would be easy to conclude, from these reviews, that distance education is indeed the panacea that Dewal (1988) suggests: 'the worldview is that it is cost-effective, has a wide reach and is a liberal and individualized form of instruction. It provides freedom to the learner and helps him move at his own pace. It promotes social equity and supports national economies by taking education to the doorsteps of the workplace' (p. 63).

Other writers, though, are less convinced and question the rationale, practice and outcomes of distance education in the third world. Flinck and Flinck (1985), for example, maintain that the educational assumptions of developed countries are inappropriate to the needs of the third world. Crooks (1983) reminds distance educators in the third world of the educational mistakes which have been made in the past when decisions are based on the procedures of the developed world. He suggests that it is unrealistic to assume that the apparent success of distance education strategies in developed countries will necessarily carry over to the third world. Todaro (1987) argues that the expected economic development of the third world has failed to materialise, because the structures which support economic growth in the developed world, do not exist in the same way in less developed countries. In a similar fashion, Zahlin (1988) notes that 'distance teaching in industrial countries was built upon a well-developed intellectual foundation' (p. 75), which is not replicated in the third world. For instance, third world academics often study overseas and are influenced by western academic procedures and publications, and tend to solve issues in ways which are embedded in western traditions of research (Bandyopadhyay and Shiva, 1980). In these circumstance, the third world may unconsciously and uncritically adopt distance education procedures in the expectation that benefits will somehow accrue. It should not be forgotten that even in the developed world there are groups of people such as rural residents, women and the economically disadvantaged who continue to miss out on the so-called egalitarian and liberating benefits of distance education programs (Conboy and D'Cruz, 1988; Nunan, 1988).

Such critiques of distance education do not represent a critical research approach as such, but are nonetheless important for the third world, for as long as an industrial view of distance education is widely accepted, then the implications of distance education for the third world remain problematic to say the least. Of course, it may be considered by some that it is

desirable to encourage distance education in the third world as an individual and industrial activity, which ultimately contributes to social and cultural change, but this should initially be critiqued and only undertaken on the basis of an informed understanding of the cultural and political outcomes of distance education. The contribution that distance education can make to change is dependent upon the developmental and political ideologies adopted by third world countries, although evidence suggests that here, as well, models are mostly adopted uncritically from the developed world (Edwards, 1989), and tend to be inappropriate to the contextual settings of the third world. A literature survey by Arger (1985) on the 'promise and reality' of distance education in third world countries concluded that 'distance education's promise of being able to provide a quality, cost-effective education for the masses of the third world remains unfulfilled because the modernisation paradigm on which it is based consists of false assumptions' (p. 13).

The problems of distance education in the third world suggest deep rooted origins in the cultural diversity and the developmental policies of third world countries. Culture and the changes brought about by development are complex issues, and the third world is faced with choosing between aspects of industrial and technological innovations, and maintaining cherished traditions. The two are not incompatible, but they do generate significant tensions within the third world and distance education has also contributed to these tensions.

Tensions between distance education and third world cultural contexts

A number of tensions can be identified between the theory and practice of distance education and the cultural contexts of the third world. Issues such as, individual gain versus group allegiance, knowledge renewal versus conservative epistemology, electronic information processing versus oral tradition, and rational thought versus supernatural belief are major issues for the development of distance education, although it is not claimed that a great deal is understood about them as yet.

There is a considerable body of literature which identifies traditional teaching and learning styles in the third world (Gay and Cole, 1967; Stringer, 1984) and the continuing strength of these traditions in the third world (Guthrie, 1986; McLaughlin, 1988) even in formally-led classroom situations (Lindstrom, 1990). Traditional teaching and learning is characterised by Harris (1980) as essentially practical and holistic, of immediate relevance to daily activities, carried out between people who maintain close personal relationships, and undertaken in group settings, mostly through observation, and often followed immediately by imitative practice.

A number of writers in distance education are conscious of the continuing influence of traditional approaches on learning within the practice of distance education in the third world. Perraton (1979) raises the matter of traditional learning styles such as group orientation in learning and questions the relevance of the basic individualised approach of distance education. Holtzman (1975) suggests that the research priorities for distance education in the third world may more appropriately rest in recognising that students from western countries are competitive, but students from the third world are co-operative, and attempting to understand the implications of such cultural factors on learning, materials production and retention rates.

Social psychologists have identified notions of individualism and collectivism as a means of distinguishing between cultures (Triandis, 1986) and the evidence strongly suggests that people in third world cultures tend to be collectivist in orientation whereas people in the developed world tend to be individualist in orientation. The factors which have emerged to make up individualism and collectivism suggest parallels and contrasts within our understanding of distance education. For instance, the theme of self-reliance in individualist cultures implies freedom to do one's 'own thing' and also to compete with others. Self-reliance in collectivist cultures implies not being a burden on the ingroup and competition does not appear to be related to it. Competition in collectivist cultures is amongst ingroups rather than amongst individuals. In individualist cultures, it is individuals who achieve, whereas groups achieve in collectivist cultures. People feel proud of their personal achievements and successes in competitive situations in individualist cultures, but people feel proud of the achievement of the group in collectivist cultures. Interdependence is seen in collectivist cultures as maintaining social harmony amongst the members of an ingroup, in which help is given to each other, scarce resources are shared, each other's views are tolerated, and conflict is minimised. Obligatory relationships are tantamount in collectivist cultures. Interdependence in individualist cultures, on the other hand, fosters contractual relationships which are based on the principles of exchange and people tend to calculate personal profit and loss before engaging in behaviour.

It may be of value to further investigate the possible form and role that an ingroup could perform in distance education in collectivist cultures given the strength of this factor. Networks of learners are not uncommon in distance education in the developed world, and tend to be established at workshops or residential sessions and are maintained through postal and telecommunication facilities. Fitzclarence and Kemmis (1989) critique their experiences in encouraging the formation of 'critical communities of scholars' within a post-graduate, distance education program. The networks, or communities of learners in the third world, may need a very different conceptualisation and basis for organisation, and demand 'closer' personal links in order to maintain the group. Evans (1989; and chapter 4) has raised a number of interesting issues regarding the concepts of distance

and place in distance education which may turn out to have particular relevance to the contexts of distance education in the third world.

There is some limited research which relates to the learning preferences of distance education students in terms of group and individual learning. Coldeway (1980), for instance, working with a sample of Canadian students found no significant difference in completion rates between students who indicated a desire to learn on their own rather than in groups. In a related area, Thompson (1984) suggests that field dependent learners may be less suited to distance study than field independent learners but Thompson and Knox (1987) failed to identify any correlation between field dependence-independence and achievement. Despite these findings not enough is understood about the cultural bases of learning and the interpersonal orientation of distance education students in the developed and less developed countries of the world. It is of value to continue to look for solutions that distance education may provide for the third world by analysing existing distance programs in terms of incongruencies between practice and the cultural and political contexts in which those programs are situated; by considering an informed 'mix' of the amounts of independence and interaction in distance programs; through participatory text production, and on-going developments in semiotics and literary theory could all be emancipatory in intent and practice (Wexler, 1987).

Holmberg (1989a) comments on the undesirable nature of 'spoonfeeding' in distance education programs and the quest for student autonomy in learning. He suggests, 'Developing awareness of problems and of the plausibility of different approaches and solutions, as well as inspiring students to take up positions of their own' (p. 131) as a desirable strategy for distance education. But this implies that students have reached Perry's (1981) relativistic stage of thinking in which they begin to recognise that knowledge is not an absolute, but a relative condition, and students are able to analyse assumptions, evaluate a range of interpretations and are able to draw their own conclusions in relation to events (Barrow, 1986). This stage of thinking is not always evident amongst students. McLaughlin (1989) provides evidence which indicates that tertiary students in Papua New Guinea are at a dualistic stage of thinking in which they see themselves as 'receptacles ever ready to be filled with "truth" and more information' (p. 3) by an authority figure. The student's focus on learning is 'to find, know and reproduce right answers' (p. 5). This is consistent with traditional education practices which promote dualistic thinking for practical survival reasons. McLaughlin (1989) adds that the response of educators in Papua New Guinea should be to 'plan experiences which provide academic and emotional support, appropriate for students operating from a dualistic mode, while simultaneously providing challenge for more relativistic learning' (p. 14).

The developments in text and dialogic forms of distance education materials referred to earlier should not assume that the possibilities for the pro-

duction of text and forms of dialogue are consistent across cultures. As dialogic developments proceed so must there be a recognition of the cultural and political contexts in which knowledge and dialogue are embedded. Lewis (1972) points out that knowledge in oral cultures, 'must of necessity be conservative in content and mode of presentation' (p. 10), and Goody and Watt (1977) maintain that within oral cultures, 'all beliefs and values, all forms of knowledge, are communicated between individuals in face-to-face contact...it makes for a directness of relationship between symbol and referent...the meaning of each word is ratified in a succession of concrete situations, accompanied by vocal inflexions and physical gestures ...the totality of symbol-referent relationships is more immediately experienced by the individual in an exclusively oral culture, and is thus more deeply socialised' (p. 457). In these circumstances, text may be considered to have both a constructive and destructive role in education in the third world, but the form of text, as opposed to its content, remains unexamined from this point of view. In more conventional forms of analysis, Watts (1981) notes that English for the majority of distance students in the Pacific region is more than likely their second or third language and the subjective meanings they attribute to knowledge statements remain problematic. The creation of text in local languages is highly desirable but it represents a task which is most unlikely to be achieved. Griffin (1981) is also concerned with the use of English in the Pacific as the language of instruction in a multi-linguistic setting, and the danger that freedom, critical thinking and self-determination may be affected. He raises the further point that the use of distance teaching mostly fails to provide the important visual signals involved in face-to-face communication, which is fundamental to the oral cultures of the South Pacific.

Further research is needed to understand notions of traditional learning, the orientation of distance learners to education, approaches to problem solving, and collectivism and the relationships between epistemology, learning styles, text and distance education in the third world given Peters (1983) analysis of distance education as 'complementary to our industrial and technological age' (p. 95), and Bååth's (1982) description of distance education as, 'In its essence, distance study is *individual* study' (p. 7). It may be that industrial and guided didactic forms of distance education, in which the creation of text is undertaken institutionally and studied by students independently, may be of little strategic use in the collectivist cultures of the third world (and yet these represent the reality of distance education programs in the third world). The perspectives offered by Sewart (1983) and Bååth (1982), may be more useful for the third world, because they emphasise collective learning, but the tendency to seek greater and greater levels of integration through collective strategies such as face-to-face teaching, workshops and study centres, in order to improve retention rates (Amundsen and Bernard, 1989), may only serve to counteract the claimed cost advantage of distance education in the third world, and to blur the distinction between distance education and conventional educational practices.

Conclusion

The research on distance education in the third world is insufficient and inconclusive but it raises a number of issues which need to be addressed. For instance, the assumptions and the models of distance education which emphasise independence and autonomy need to be critiqued, as well as the role and maintenance of indigenous knowledge in distance education programs, the need to investigate the cultural contexts in which distance education is situated, the desirability of developing sensitive and appropriate distance education initiatives, distance education as a change agent, and the consequences of the trend towards the internationalisation of knowledge need to be debated and understood. For the present, the reality of distance education is one of rapid expansion at local, national and international levels. Distance education needs to be critically assessed and viewed in the context in which it occurs if it is to realise its potential in the third world. Theories and practices in distance education have emanated from industrialised countries and the metaphors that are used, signify the attitudes and values, and the modes of thinking which are highly representative of those countries. Terms such as individual learning, personal work and independent of tutors (Holmberg, 1983), a plurality of scholarly positions (Holmberg, 1989a), individualisation, self-pacing, evaluation, apartness and autonomy (Moore, 1977), and division of labour, industrialisation and rationalisation (Peters, 1983), represent much of the thinking about distance education in the developed world at present, and contain specific ideologies which may not be consistent or appropriate in third world cultures. The metaphors of distance education in the third world might be better thought of as community, relationships, support, practical knowledge and action, and the theorising about distance education in such a context may emphasise collectivism, group learning, dialogue, co-operation and agreed forms of knowledge. This is not to say that theories have not been generated in the developed world, which are concerned with these notions (e.g. Gramsci, 1975; Fréire, 1985), nor does it mean that these notions are undesirable for distance education in developed countries. It is just that distance educators, for the most part, have not taken up these ideas, although a more socially responsible view of distance education is beginning to take some effect, as more and more distance educators are prepared to question the 'mindless empiricism' (Morgan, Chapter 2) and the 'dehumanising' (Evans and Nation, 1989b) conceptions held about distance education.

In order for distance education to fulfil an appropriate role in the third world, its underlying assumptions must be critiqued, and rather than reproduce the structures of the developed world, distance educators must seek to generate appropriate and sensitive models and practices, derived from forms of research which are reflective, participatory and emancipatory in intent and procedure and are situated in the cultural contexts of the third world.

Chapter 6

Post-Fordism and research in distance education

Mick Campion

MUCH CONTEMPORARY DISCOURSE about general industrial strategies is grounded in debate about post-Fordist or neo-Fordist responses to the crisis of Fordism. However, a cultural lag seems to be evident when we examine the predominant conceptual orientation which is currently driving Australia's policy on distance education at the higher education level. In this paper I: challenge the dominant paradigm and, in the process, indicate the urgency of this challenge; provide some practical ways in which research in distance education could, and should underpin that challenge; and discuss some ideas for the distance education research community to develop a broader and deeper scholarly foundation.

I should stress at the outset that I view this challenge to be a matter of urgency for policies are currently being implemented in Australia which may make it very difficult to change course. Staff working within traditional institutions dealing with on-campus students may view distance education and its restructuring with a certain disdain given that currently it is only serving a minority of students and hence appears peripheral. However, it is not uncommon for changes that apparently are occurring at the periphery to become crucial for a whole system, and many aspects of the recently generated Unified National System of higher education may call forth structures and processes which comfortably interlink with a reorganized provision of distance education. Furthermore the shape of a system of higher education provision may both reflect and influence core features of the society in which it is situated.

The provision of higher education in Australia, as in many other nations has expanded at an enormous rate this century. For example, in 1906 when Australia's population was approximately one quarter of its current level, a total of 2,575 students were attending university (Commonwealth of Bureau of Census and Statistics, 1901-1907, p. 743). In the year 2,001 it is projected that 675,000 places will be needed if Australia is to be comparable in this regard with similar nations (Dawkins, 1987, p. 13). Whilst these statistics are not strictly comparable they do illustrate the magnitude of the expansion.

An awareness of this shift from provision for a small minority to provision for a large number, in conjunction with an awareness of the impact of similar shifts in relation to various manufactured goods earlier this century, has led to the introduction into educational policy making of conceptual tools grounded in an analogy with mass production.[1]

Watkins summarises the essentials of this approach in relation to industry generally as follows:

> The dominant organisation principles then sought centralisation, large production units which were vertically integrated, mass production of large quantities of standardised goods, and the servicing of a large standardised consumer market. The underlying logic of these principles was that prices could be kept low and profits relatively high through internal economies of scale (Watkins, 1989, p. 7).

Badham summarises the major elements of the production process related to mass production:

> In the past, technological development has always been associated with mass production and the advantages of scale. Economies have been linked to mass production, specialisation, standardisation, dedicated machinery, and the bulk purchase of materials (Badham, 1986, p. 4).

This is what is referred to as the Fordist paradigm, and as pointed out by Mathews, in the couple of decades following the Second World War, it appeared to be working as a general industrial model:

> All the elements of the Fordist system worked together: markets for consumer goods expanded as purchasing power grew, and mass-producing corporations supplied these markets with standardised goods maintaining their edge through technological supremacy and productivity growth (Mathews, 1989, p. 28).

It is this production paradigm which has in recent years dominated distance education policy in Australia in a period of substantial restructuring. For example:

> A centralised system, however, has the potential to realise cost efficiencies and quality and production standards through economies of scale that a rationalisation to eight DECs will still not achieve in itself. The establishment of a coordinating mechanism provides the opportunity to obtain at least part of these additional benefits within the new DEC arrangements (National Distance Education Conference, Agenda Paper 1, 1989, p. 1).

The seminal work of Otto Peters, which has been of crucial importance in the development of theories of distance education conflates industrial production with mass production, i.e. Fordism:

> Peters presents a comparison of distance teaching and industrial production of goods under the following headings: rationalisation; division of labour; mechanisation; assembly line; mass production; preparatory work; formalisation; standardisation; functional change; objectification; concentration and centralisation (Keegan, 1986, p. 83).

In terms of distance education practice, the United Kingdom Open University was conceptualised and commenced whilst the Fordist production paradigm continued to dominate, and that institution has been enormously influential world-wide. None of this should of course be surprising, for as Badham and Mathews point out (1989, p. 221), the Fordist paradigm has had an influence which has extended well beyond mass production industries. However, as was indicated previously, the Fordist paradigm as a general industrial paradigm is coming under increasing scrutiny for, as Watkins argues:

> In the 1970s and 1980s this form of economic structure started to falter. A number of contradictions and tensions within the mass production, mass consumption paradigm became manifest. These tensions can be roughly depicted as being related to problems in productivity, competition and profitability (1989, p. 7).

Badham and Mathews (1989) provide us with a useful overview of key arguments in the debate about Fordism and responses to the said crisis of Fordism and in doing so provide us with a set of conceptual tools which can help to clarify and sharpen our analysis of distance education. Indeed they commend that others enquire into the extent to which their model assists in the description of other firms, sectors, national economies, or eras. This paper is then in part, a preliminary effort to point to one possible specific application.

My first task is to display how the debate about distance education policy will be massively and fruitfully enlivened if we can even begin to dislodge the Fordist paradigm from its privileged and seemingly secure place in the repertoire of policy makers. However, as Jaikumar remarks about manufacturing, even this step may not be accomplished easily: 'Making flexibility and responsiveness the mission of manufacturing flies in the face of Taylor's view of the world, which for 75 years has shaped thinking about manufacturing (Jaikumar, 1986, p. 76).

What then of the conceptual scheme Badham and Mathews provide, and how can it be related to the debate about distance education? Whilst many of the conceptual elements they use when taken in isolation appear fairly uninspiring it is their separation and orderly collection which is of value in dissipating the confusion which they argue currently exists (Badham and Mathews, 1989, p. 194). As previously mentioned they distinguish between firms, sectors and national economies, but I believe we can and should extend this continuum both up and down. Clearly production paradigms may have an influence on the world economy; on the interna-

tional division of labour for example. At the other end of the scale as they acknowledge it is clear that within any particular firm different sections may need to be distinguished. Furthermore whilst they focus upon the production of goods they envisage that their model can be applied to the production of services (p. 218 and p. 196).

The key point here however is to distinguish between the types of organisations being considered. So, for example, a research agenda related to distance education would need to distinguish between the processes of production used within a particular institution and the paradigm which dominates at the national policy level. Of course once these separate units for analysis are defined it is clear that the interrelated influences of the differing organisational units will need to be understood. The current restructuring of higher education within Australia, for instance, can only be understood if the changing relationship between the Federal government and the institutions is understood.

Badham and Mathews distinguish between production processes, production strategies and production paradigms. They define each in the following manner:

Production Process:

> ... a firm's operating point along each production dimension (p. 206).

The three dimensions of production upon which they concentrate are:

- degree of product innovation
- degree of process variability
- degree of labour responsibility (p. 206).

Production Strategy:

> ... a firm's preferred operating point along each production dimension. ... We can picture the firm's strategy as an attempt to shift its operating point from X to Y (p. 207).

Production Paradigm is defined in a more indirect way, as follows:

> Firstly we wish to distinguish between processes, strategies and paradigms, restricting paradigms to interpretations of efficient production surrounding exemplary models. ... Production processes and strategies are neither necessarily in direct correspondence with production paradigms nor are they a simple reflection of them (p. 211).

They draw these notions together in the following manner:

> In this model, production is identified as a dynamic system involving not only organizational production processes but also the production

> strategies and paradigms that influence the development and change of these processes. It is the interaction between these components of the production system and broader intra-organizational and extra-organizational conditions that provides the primary focus of interest in discussing the source and implications of new production systems (p. 206).

If we consider the application of this model to distance education we can begin to see that as researchers we would need to obtain information upon: (a) the actual processes in use in institutions producing distance education materials; (b) the strategies which are informing the continuing development of distance education production policy and processes within such institutions; and (c) the paradigms which inform the thinking of key decision-makers inside and outside such institutions, together with information about which paradigms inform the thinking of those who conceive of themselves as outside the decision-making process.

They provide us with further conceptual equipment in relation to each of these organising concepts. In relation to production paradigms they remind us that issues such as the processes of paradigm formation, the paradigm's character, location, variability, means of transmission and level of influence are all of significance to those wishing to conduct research in this area (Badham and Mathews, p. 210).

A recent example of how a paradigm can have practical effects is provided by the 1990 National Priority (Reserve) Fund allocation process. Institutions were informed that video conferencing was a priority area. As a consequence a number of institutions sought funds for video conferencing projects and not surprisingly received them, but once the hardware and communications links have been set up it is clear that they will need to be used. The promotion of, in this case, a high technology pathway then generates a need to use the technology. A total of $2,850,000 has been committed for such video conferencing projects in 1990 and 1991 (Allocations from the National Priority (Reserve) Fund, 1990, table 5.9). I am not seeking to prejudge the utility of video conferencing for distance education here, all I am seeking to do is to give a practical example of how a paradigm can influence 'production' processes.

Further crucial issues are raised by Badham and Mathews in relation to production paradigms. For example their distinction between management-oriented and worker-oriented paradigms where the key criteria for the former is said to be profitability and for the latter enhancing the creativity and job satisfaction of employees (Badham, and Mathews, p. 200). These differing orientations come to be reflected in the difference between neo- and post-Fordist industrial strategies. Whilst for some the latter shade into the former, and the new production process has simply become a more effective and essentially more exploitative system, for Mathews, a fortunate coincidence occurs which is reflected in the following quotation:

> At last, the labour movement has history and economics on its side. The condition that will determine whether firms will be able to stay in highly competitive international markets in future is that they have a flexible, highly skilled, responsible and democratically organised workforce which collectively, through its unions, codetermines with management how the work will be done....Industrial democracy has become a matter of economic survival (Mathews, 1988, p. 20).

The difference between these two perspectives on the implications of post-Fordist strategies is, and clearly will, remain a matter of considerable contention, but a further useful distinction they provide for us is that between economic and ideological criteria of paradigm dominance, a distinction which, in effect, mirrors their distinction between processes and strategies (Badham and Mathews, 1989 p. 199). In order to decide whether a paradigm is dominant or not we need to decide whether we mean 'dominant' in terms of being found to exist in the actual processes of production or 'dominant' as a vision of what the production process should look like. The distinction between strategies and processes seems fairly clear but it is important to note that they see production strategies to be the consequence of negotiation and re-negotiation (Badham and Mathews, 1989 p. 209). Furthermore in relation to the delineation of different types of production processes they indicate their awareness of the difficulties of operationalising the categories required to locate production processes upon each of the three dimensions mentioned above, namely product innovation, process variability and labour responsibility.

At this stage it is appropriate that we turn to the major production paradigms currently being debated in order to illustrate how positions on these dimensions are the defining characteristics of different production systems.

Fordism

Low product innovation

Low process variability

Low labour responsibility

Neo-Fordism	Post-Fordism
High product innovation	High product innovation
High process variability	High process variability
Low labour responsibility	High labour responsibility

(Badham and Mathews, 1989 p. 207)

Distance education research is therefore required in order to ascertain which of these production system models is reflected in distance education production processes, strategies and paradigms. For example, a low score on all three dimensions locates an operation within the Fordist region. In

relation to an educational system, this might be illustrated by a single national monopoly provider of distance education which invested heavily in the course preparation phase in such a way as to require large numbers of students over a long period of time in any particular course in order to amortise high fixed costs. It would also require low variable (teaching) costs and hence reduce the level of labour responsibility for the majority of staff. Hence the majority of staff are effectively deskilled, but a small core of staff gain skills. Furthermore a large investment in dedicated production facilities would require limited process variabil 'y in order to ensure that capital costs could be amortised over a sufficiently lengthy period.

In relation to higher education, the issue of responses to the crisis of Fordism is complicated by the fact that institutions and academics have, in the main, been fighting a rearguard action in defence of an orientation more reminiscent of craft production. This has slowed the onset of Fordist practices in this sector and opens the possibility of skipping that stage and moving with the assistance of appropriate contemporary technology more directly into the post-Fordist era. A more decentralized, democratic, participatory, open and flexible higher education system could then be envisaged as economically viable, given that we are living in a period in which ever cheaper and more user-friendly methods of desk-top publishing, computing, print, audio, video and communications technologies are available (Campion, 1989).

As is apparent from the above models the key variable differentiating between the neo- and post-Fordist options is the level of labour responsibility. This will however have consequences for choices of technological pathways and forms of both product and process innovation:

> ... one of the central features of neo-Fordist production strategies is their likely association with production paradigms that direct technological development as far as possible towards the degradation of skills and the centralization of control. Aware of the flexible potential of new technologies, and of the need for limited forms of worker responsibility, managerial strategies in this area will be focused on further developing technology in a direction that overcomes short term needs for increased worker skills and responsibility. This contrasts with the post-Fordist region in which paradigms will tend to place greater emphasis on technological development which draws upon, and improves the effective use of, an increasingly skilled and responsible workforce (Badham and Mathews, 1989, p. 208).

The emphasis so far in this paper has been upon outlining the basis for an analysis of distance education provision through an application of this production systems model, and yet we must keep in mind that production is only one side of the system for:

> Fordism also produced a new mode of consumption. The higher wages bought the very goods they were paid to produce. The terms of Fordism's contract was that any worker who accepted the tyranny of

> the production line would be paid enough to transform his or her home with consumer durables. It was this contract which formed the basis for the post Second World War boom (Pimlott, 1984, p. 213).

Once doubts are raised about the Fordist paradigm in relation to distance education space arises for a more open and imaginative debate about the form and content of higher education. If the distance education professional community is to contribute to that debate in a productive way it is my view that we must play a significant part in generating a broader and deeper scholarly foundation for our research.[2] In this way we may be able to conceptualize a post-Fordist agenda which will ensure that progressive potential is not lost in favour of a neo-Fordist orientation. For example, Pollert (1988) in addressing the issue of flexibility reminds us that:

> ... a slippage has allowed the discussion of restructuring to veer away from the global issues of capital structure, investment, exchange rates, trade relations, to the homely, and apparently more manageable 'problem' of labour. The argument runs that the changeability of markets is the supreme challenge facing management, and its solution lies in the flexibility of adaptability of labour, both in the workplace, and in the labour market. Other dimensions of production, such as organisation and design, in which labour costs are not a prime issue, and other managerial driving forces, such as marketing, are swept off the table (Rubery *et al*, 1987). Such an ideological assumption is far from new; it accompanied the concern with the British worker's 'productivity' some twenty-odd years ago....(p. 43)

By bringing to the foreground the parameters within which Badham and Mathews's orientation tends to focus attention I am reminded of their acknowledgement that 'all (production) paradigms necessarily impose a particular view of production on a complex reality and are essentially political in their inspiration or effect ' (p. 214-215).

Clearly, then we need to be aware of their political orientation if we are to assess the likely outcomes of policy grounded in their analysis. We can best do this, in my view, by exploring certain facets of Fabianism. At least *prima facie* support for such an exploration is provided by the fact that John Mathews has been, and perhaps still is editor of a series of pamphlets published by the Australian Fabian Society (Mathews, 1988, opposite p. 60). Membership of the Australian Fabian Society in recent years has included Bob Hawke, Bill Hayden, John Cain, John Bannon and Neville Wran (Mathews, 1989, p. 46). Providing a summary or outline of Fabian policy is no easy matter, for as Cole (1943, p. vi) states, 'My views are not be regarded as "orthodox Fabianism" for the Fabian society, I am glad to say, has no orthodoxy'. This view is maintained in the current Australian Fabian Society, for example:

> The Fabian tradition is one of achieving social progress through research and education. The Society has no policy beyond that implied in a general commitment to democratic socialism, and issues its

> publications as the opinions of their authors, not of the organisation (Mathews, 1988, p. 62).

However, few would doubt the influence of Fabianism upon democratic socialist parties:

> For most Social Democratic and Labour Parties, socialism is no longer a major concern. They have been left with the legacy of Fabianism, a commitment to technocratic utilitarianism, the greatest efficiency for the greatest number, an acceptance of managerial society, and a refusal to consider capitalism as a whole (Wintrop, p. 235).

This technocratic and essentially anti-democratic tendency of Fabianism is referred to by Norman and Jean Mackenzie (1977) in a manner which merits repeating here:

> ... the Webbs concluded that superior societies could be built only by superior people. They had come increasingly to look for an elite which would play this role in Britain; by the end of the century they were sure that this task would be undertaken by the new class of salaried experts - scientists, social scientists, professional people of all kinds - whose skills could be devoted disinterestedly to the service of the community. They saw themselves in this light and they assumed that other specialists would work as loyally for public as for private enterprise. The civil servant was their modern counterpart to Plato's guardians and Comte's enlightened managers.
> In this respect Fabianism was the ideology of the emerging salariat, and of the writers and journalists who spoke for it, providing a rationale for all those who felt that here was a 'right' way of running society and that it was their mission to discover it. All through the Nineties the Fabian leaders were feeling their way towards a conception of society which could not be accommodated to the traditional theory of democracy, in which the higgling of parties was the political counterpart of the haggling of the market. If social research into 'facts' would lead to a scientifically valid policy, it was wrong to assume that political problems could be settled by the catch-as-catch-can of elections, and wrong, too, to permit such issues as hours of work, factory conditions and even rates of pay to be settled by class conflict between employers and trade unions. Doubt could exist only on such matters where there was ignorance or insufficient evidence. Supply those deficiencies by education, research and training, and science could then regulate society (1977, p. 250)

To paraphrase John Vaizey (1971, pp. 60-64), the Fabians were anti-revolutionary, constitutionally minded bureaucrats who believed that capitalism suffered from a lack of planning and from inefficiency which could be resolved through the application of social science and the generation of correct administrative arrangements. Unlike the Marxists they treated the social sciences, for example economics and sociology, as neutral. The Marxists saw such sciences as manifestations of the class society in which they arose. As Vaizey puts it 'In the Fabian philosophy the world was

without tension, conflict or strife: a cool scientific approach would solve all problems'(p. 64). The influence of Comte and positivism upon Fabian thought is referred to by McBriar, (1966, p. 148), the Mackenzies, (1977, p. 250); and Vaizey, (1971, p. 62). Badham and Mathews suggestion that, 'The elaboration of such a post-Fordist model of viability merges with the best thinking in the emergent science of cybernetics' (1989, p. 237) indicates a similar orientation.

Finn, Grant and Johnson outline the place of such ideas in the Labour movement in the United Kingdom when they state that:

> On the one hand Labour has embraced a broad, ethical anti-capitalism, concerned, above all with social justice and egalitarian in temper. ... On the other hand, Labour's repertoire has included the tradition of Fabian social engineering, best understood as a drive for 'national efficiency' and scarcely incompatible either with a corporate liberalism or a State capitalism. This dichotomy has certainly been visible in education (1978, p. 181).

The focus upon 'national efficiency' in the Webbs' work on industrial democracy is related by the Mackenzies to an idea of a 'scientific socialism in which cooperation in the interests of the whole community would replace selfish sectionalism'(1977, p. 251).

Ideas related to 'national efficiency' clearly underpin the current policy on higher education where it is stated that:

> Further, it (the government) acknowledges the relevance of all disciplines to our current economic circumstances; for example, our economic future as a nation will depend not only on what we have to sell overseas but how effectively we sell our products. The latter task will require not only familiarity with the languages of our region but, more broadly, a knowledge of the history and culture of the countries involved and their ways of doing business (Dawkins, 1988, p. 8).

All disciplines are acknowledged, but only insofar as they serve the interests of the economy. We are told that, 'The society we want cannot be achieved without a strong economic base' (Dawkins, 1988, p.6). Mathews shares this orientation:

> Growth and efficiency are clearly central to continued political success, and underwrite all other programs of social and economic transformation; anyone who ignores them or discounts them disqualifies himself or herself from mainstream political discourse (1988, p. 8).

Lest any feel that this drive for 'national efficiency' is solely a recent Western orientation, Healy writes about Fukuzawa, who set up a school in Tokyo in late nineteenth century which was to become Keio University in Tokyo:

> Like most reformers, Fukuzawa realised the central importance of education to the task in hand. Japan was emerging from centuries of feudalism into a nineteenth century red in the tooth and claw of Western imperialism. How was Japan to preserve her national sovereignty when the whole ethos of her society, formed by the dominant Confucian tradition, was one of subservience, vassal to lord, wife to husband, son to Father? If there was a solution to this grave problem, it lay in education. And here Fukuzawa is quite explicit: education has a political function in the first instance. As he expressed it in the Bummeiron no gairyuku (An Outline of a Theory of civilization) (1875) :
>
> > The only reason for making the people in our country today advance toward civilization is to preserve our country's independence. Therefore, our country's independence is the goal, and our people's civilization is the way to that goal (Fukuzawa, 1973, p. 193).
>
> Under the pressing circumstances of the period, Fukuzawa has no time for nice distinctions in logic about knowledge being an end in itself; knowledge is commandeered for the nation's security (Healy, 1979, p. 256).

This reference to late 19th century Japan is intended to emphasise Finn, Grant and Johnson's point that such an orientation is compatible with a wide range of apparently different political options. Arblaster writing in the mid-1970s on the rapid expansion of higher education in the United Kingdom, argued that:

> It was the economic argument in favour of expansion which counted for most in the minds of the politicians, the state bureaucracy and the capitalists. The democratic argument, the argument from fairness, naturally took second place. Consequently it was predictable that expansion should be accompanied by intensive efforts to gear tertiary education more thoroughly and completely to the requirements of contemporary capitalism. There was no need to convert the academic establishment to this point of view: they already shared it - with two marginal exceptions. On the Right a few cultural conservatives looked back nostalgically to the days when Oxford and Cambridge were the universities, and education was based, in theory at least, on gentlemanly ideals and the Renaissance concept of the whole man. On the Left an even smaller number of socialists, few of them anywhere close to the centres of power, speculated about what a democratic system of higher education might be like. Both minorities could be, and were, ignored by the academic bureaucrats, who to borrow a phrase from the University Grants Committee, responded enthusiastically to the pressure of the state and 'industry' and set about establishing close ties with the owners and controllers of industry (where these did not already exist) at both the local and the national level (1974, p. 172).

I hope this rush through a range of issues related to Fabianism has been sufficient to stimulate an interest in the context from which Mathews's perception of post-Fordism has developed. Frankel draws our attention to

the continuing influence of this tradition:

> One hundred years ago, the early Fabians believed that through a process of enlightened reforms, mass education and social planning, the irrational aspects of capitalist industrialism could be overcome in favour of a future society characterized by greater equality, culture, attractive urban environments and so forth. Today, this tradition lives on in the works of people such as Australian Labor Minister for Science, Barry Jones. Like the early Fabians, Jones is a social reformer who believes in working through the existing political economic structures (1987, p. 40).

Later Frankel says:

> Despite their belief in major social reforms when in government, many contemporary Fabians are loathe to upset capitalist interest groups. In the face of recession, the Fabians are content to rely on private sector profitable recovery and hope that the benefits 'trickle down' to the 'less fortunate'(1987, p. 45).

Blackburn succinctly articulates the dilemma:

> The traditional criticism of the Left has been that social democratic parties like the Labour Party sacrifice principle in order to gain power. The real criticism to be made of them is rather that they cannot gain power as long as they sacrifice principles for winning elections. They may well win but under these conditions 'power' is simply permission to operate the status quo ... Social democracy is thus trapped in the closed circle of electoralism. It restricts its own freedom to win a partial power which is then further curtailed by its initial restriction. The result is a profound impotence and demoralisation (1966, p. 237).

In the early parts of this article my objective was to open up the possibility of debate about the dominant paradigm which currently constrains thinking about distance education. In the latter part I have sought to display how that debate only scratches the surface and barely reveals the more fundamental issues which the expansion of higher education raises about democracy. Where Mathews, a prolific writer about post-Fordism, stresses the democratic potential of post-Fordism we need to remember that, as he himself points out, '... post-Fordist production regimes will employ fewer people, and more highly skilled and educated people' (1989, p. 149). Clearly such a scenario raises numerous questions about the distribution of both skills and rewards, which will have enormous impact upon higher education.

Evans and Nation state that: 'Above all, critical reflection offers teachers the best means for improving their own practice' (1989a, p. 237). I hope that in this article I will have illustrated the need for such reflection to encompass macro as well as micro systems and for the analysis of such

systems to be grounded in historical, political, sociological and philosophical scholarship. Paradoxically, the force of this conclusion may well be enhanced by some of the weaknesses of the article.

Notes

1 A more detailed exposition of this aspect of the argument is presented in Campion (1989).

2 I am grateful to Terry Evans for his comments on the original version of this paper, and particularly for his suggestion that we treat such scholarship as the responsibility of the distance education professional community rather than formulate the responsibilities of that community in a narrower fashion.

Chapter 7

Chaos and educational computing: deconstructing distance education

Chris Bigum

THIS CHAPTER EXTENDS a project which is being pursued in the analysis of the new information technologies in education to the field of distance education; it is a project which is concerned with examining the theoretical and philosophical bases of the modern curriculum and how these bases are currently being challenged and transformed. The project draws upon contemporary ideas of postmodernity and postmodernism which can be described as those contemporary cultural and intellectual developments stemming from neo-Marxism, post-structuralism, feminism and the new science. In this paper I make considerable use of one of the elements of what Lyotard calls postmodern science:

> Postmodern science – by concerning itself with such things as undecidables, the limits of precise control, conflicts generated by incomplete information, *'fracta'*, catastrophes, and pragmatic paradoxes – is theorizing its own evolution as discontinuous, catastrophic, nonrectifiable, and paradoxical. It is changing the meaning of the word knowledge, while expressing how such a change can take place. It is producing not the known, but the unknown (Lyotard 1984, p.60).

And I draw upon the teaching of two off-campus units in educational computing offered by the School of Education at Deakin University as a means of grounding these ideas in a practice.

First, the apologies...

In 1986, Sir James Lighthill, then President of the International Union of Pure and Applied Mechanics, wrote that he wished to apologize on behalf of his colleagues for having: 'misled the cultivated public for three centuries by claiming determinism of Newtonian systems'. As Prigogine, commenting on this apology suggests:

> This is an astonishing declaration – while we all make mistakes and apologize for them, it is quite extraordinary that someone should apologize in the name of the scientific community because it has propagated incorrect ideas for three centuries (Prigogine 1989, p.398).

Those same incorrect ideas are, of course, the basis of most of modern practical engineering. Nevertheless, Lighthill's apology is important in that it points to an important shift in contemporary science, from the determined to the indeterminate. It is a profound movement when considered in the context of the previous three hundred years in which, what might be called 'Newtonian science', held sway. This view of the world emphasises predictability, linearity and control and is one of the important cornerstones of Western thought. It is not difficult to identify this kind of science, either literally or metaphorically, in social science, economic science and philosophy. Such pervasiveness reflects how deeply metaphors derived from 'Newtonian science' run through Western culture.

If Lighthill's apology were sufficient to undo the profound cultural effects of hundreds of years of 'Newtonian science' then we would have witnessed a dramatic reshaping of much of the social structure of a culture which has been firmly grounded in notions of linear predictability and control. What we have witnessed instead is a reshaping of science: it has apologized and moved on. The same cannot be said for the social sciences and education in particular. While eschewing a crude, slavish adherence to the literal models of linear science, the deep-seated metaphors that derive from Newton's mechanics remain. In even the most radically theorized forms of education it is possible to identify the heritage of linearity, predictability and control. As Christopher Lucas suggests, it appears that the the social sciences have not noticed the dramatic changes in Western science:

> The abandonment of Newtonian mechanics for understanding reality is relatively well advanced. Yet, the metaphysical view of the world it once inspired has proved rather more durable. Perhaps because of cultural lag, only in recent decades have the philosophical implications of quantum physics begun to reverberate through other knowledge domains. Overall, the new image of reality unfolded by modern science portends a radical revision of how the world and human consciousness itself is to be comprehended (Lucas 1985, p.165).

If quantum physics has only begun to reverberate then its most recent anti-Newtonian cousin[1] , chaos theory has yet to ring its bell. Gleick's (1987) work is a readable account of chaos theory and it shows that it took considerable effort to avoid chaos in pursuing scientific work. In order to maintain the myths of 'Newtonian science', only the systems that were amenable to linear analysis were those that were investigated. These were also the systems that were taught in texts, while the few non-linear systems that did make it into texts were those unrepresentative few that were amenable to linear approximations. In order to cope with 'real' systems, scientists invented 'ideal systems' and then used deviations from ideality to talk about them. The amazing thing is that scientists were able to dismiss for so long the behaviour of nonlinear systems. As the mathematician Stanislaw Ulam remarked: 'to call the study of chaos "nonlinear sci-

ence" was like calling zoology the study of non-elephant animals' (cited in Gleick 1987, p.68).

While imagining what a nonlinear or chaotic social science might look like is difficult, there has been an attempt in curriculum theory to explore these ideas. William Doll (1989) considers the metaphorical and literal implications for curriculum of post-Newtonian views of the physical universe. He draws heavily upon Ilya Prigogine's Nobel prize winning work on the thermodynamics of far from equilibrium systems (Prigogine and Stengers 1984). The significance of Doll's work is not the outcomes, which can be mapped on to existing liberal and emancipatory views about education, but that the metaphors he applies are derived from contemporary views of science. In fact, he claims that studying contemporary developments in biology, chemistry, cognition, literary theory, mathematics and theology is a must for curricularists (Doll 1989, p. 251) Current academic curricula, claims Doll, have their roots in the Newtonian paradigm that dominated Western scientific and intellectual thought well into this century.

I intend to take some of the metaphors of nonlinear science in particular, and some ideas from the postmodern literature and use them as a means of posing questions about the theory and practice of distance education. Drawing upon ideas from chaos theory will require, on some occasions, that readers who are unfamiliar with these ideas suspend their disbelief until such time as they can investigate for themselves.

There are many ways to construct and deconstruct a narrative about the focus of this paper: distance education. I have chosen to collect my ideas around those taken from postmodernism and the new science of chaos in order to keep in the foreground the discomfort that derives from these ways of working with ideas.

Deconstructing distance education

The term that unites most readers of this text is 'distance education'. The label implies that it is education that is somehow different from what one presumes is 'normal', i.e. traditional, face-to-face education. Importantly, education which is not 'normal,' that is different, is less privileged than the 'real' thing. The difficulty we have in talking about what is other than distance education in non-negative terms attests to the valuing of the ideas that support understandings of distance education as aberrant, not the best, not the *ideal* form of education. To facilitate the deconstruction, I have invented the term 'proximity education' to refer to the practices that occur in classrooms, lecture theatres and tutorial rooms. The next move in deconstructing the proximity education/distance education binary is to identify what is privileged or valorized in proximity education.

Ideality

The basis of any educative act is communication. The valuing of face-to-face communication over other mediated forms of communication assumes that there is something essential or pure in communication that derives from the physical presence of those who are communicating, that it is unmediated. Such communication becomes the ideal state against which other forms of communication are compared less favourably. The imagery of the ideal states of science is evoked. Ideal states which in fact do not exist, but against which all non-ideal states are compared, have been the basis for much of the development of what I will refer to as modern science. In a very real sense, exception was made the rule. Ideal states in science were valorized because they are computable, linear, predictable, controllable, conforming to the precepts of Newtonian determinism. The preoccupation of scientists with ideal, simple systems, until very recently, prevented their engagement with a world that is very rarely ideal, simple or predictable.

Ideal state science operated by describing 'misbehaving' systems in terms of their departure from ideality. In fact, computations were only tractable when such 'deviations' were small. In the categories that derive from such an approach, deviance becomes the unit of description.

In the discourse of distance education, it is not hard to discern pointings to non-ideality in the communication between student and teacher. But what is it that is actually being valued in the ideal state? What is the 'ideal state' in the discourse of distance education? Is it necessary to posit such a state and what are the consequences of accepting such a myth in understandings of forms of communication that are not ideal?

Immediacy

Asserting the importance of the *immediacy* of face-to-face contact is not unlike the privileged position of *simultaneity* in Newtonian physics. In Newton's model of the universe an absolute frame of reference is possible in which all events are perceived simultaneously, a model which requires light to travel at infinite velocity. The structure of many Deakin off-campus course guides can give a sense of a universal frame of reference being constructed at Deakin. For students, there is absence of simultaneity as they struggle, each in their own frames of time, space and education, to understand the explicit and implicit meanings of the course materials and assignments. The defining, valid frame is the one at the origin, which is where we just happen to be. History describes how Einstein deconstructed the Newtonian notion of universal time and replaced it with a space-time continuum and an infinity of possible frames of reference. The discursive

practice of the distance course is the dominant and defining frame for the student subject. It is less common to think of the distance course as being positioned in a complex of student frames, i.e. constituted through and by their discursive practices. Rather than the observer/teacher at the centre constructing the students of the course, the course and teacher are constructed by the many student observers who are other than at the centre.

The immediacy of proximity education provides the means of continually relocating students in the discursive practices of the teacher. The teacher's reading of student behaviour is inscribed in a set of beliefs that normalize the view that student learning can and must be predicted and controlled. Such beliefs reach deep into the episteme that guides Western thought, that of a linear, predictable and hence controllable world; masculine science constructs a world in which man is justified in controlling because he can control. While the slavish belief in control and predictability has been pushed under the surface of proximity education by things like student-centred pedagogy, and constructivist views of learning, it remains important, an almost compensatory belief in the practice of distance education. For in the current practices of distance education, the opportunity for immediacy is severely curtailed. Some practices in distance education employ highly structured texts that give students an immediate response to their work. Other approaches employ higher forms of technology to supply moments of immediacy, i.e. telephone, electronic mail and fax.

Immediacy it seems may be valued by the student in terms of feedback of a different kind, of reassurance that what is being said and done conforms to what is required by the teacher. In this respect, students in educational computing units receive surrogate immediacy from the computer they are using in that they receive reassurance in the form of machine feedback. Given the emphasis in these units that is placed upon the personal development of computing knowledge and skills by students it may explain the sense of engagement that students express about their computing work. In this sense then, the machine has replaced the teacher, not in the sense predicted by behaviourists but in a more important sense of providing an immediacy that is not present in courses in which interactive media do not play a part.

Feedback

In chaos science, feedback is understood as playing a crucial role in the generation of complexity and chaos in the natural world. It is *the* mechanism that ensures that simple systems exhibit complicated behaviour.[2] This is feedback of a very different kind to the correcting, immediacy-serving feedback of distance education. In distance education, feedback is seen as reducing complexity and uncertainty in the minds of student and teacher: intuitively the model of feedback being subscribed to does that

and that is what is being valued. On the other hand, feedback in most natural phenomena can lead to increasing complexity. Therefore, it could be argued that a complex and chaotic system like weather is a more appropriate metaphor for distance education, indeed for any form of education rather than the metaphor of the closed, feedback-controlled, ideal system of Newtonian determinism.

It is tempting to try and map 'critical reflection' in distance education onto the notion of feedback as it is considered here. Rather than teacher and student constituting 'the system', in critical reflection usually only one of the actors is considered. In one sense, critical reflection does represent making an output into an input and in theory leads to a richer information state for the person reflecting. Critical reflection however is seen as a means of solving problems presumably through an eventual reduction in complexity. It is unclear whether pursuing this metaphor more rigorously will be fruitful for the proponents of critical reflection. There appear to be useful parallels though by including a consideration of this practice in deconstructing distance education.

Interestingly, the dilemmas of control and predictability in what should be the system most like the 'ideal' closed feedback-driven model, that of a human interacting with a computer, recently prompted an analysis that draws attention to what the Suchman describes as 'situated action'. Situated actions are seen as 'actions taken in the context of particular, concrete circumstances.' (Suchman 1987, p.viii). In her analysis she argues that rather than pursuing 'the plan', we all act like the Trukese navigator described by Berreman:

> Thomas Gladwin (1964) has written a brilliant article contrasting the method by which the Trukese navigate the open sea, with that by which Europeans navigate. He points out that the European navigator begins with a plan – a course – which he has charted according to certain universal principles, and he carries out his voyage by relating his every move to that plan. His effort throughout his voyage is directed to remaining 'on course.' If unexpected events occur, he must first alter the plan, then respond accordingly. The Trukese navigator begins with an objective rather than a plan. He sets off toward the objective and responds to conditions as they arise in an *ad hoc* fashion. He utilizes information provided by the wind, the waves, the tide and the current, the fauna, the stars, the clouds, the sound of water on the side of the boat and he steers accordingly. His effort is directed to doing whatever is necessary to reach the objective. If asked, he can point to his objective at any moment, but he cannot describe his course (Berreman 1966, p.347).

The Trukese, in responding to the complexity of their environment as they navigate, take advantage of another of the notions of chaos science, that high disorder or chaos is a state rich in information.[3] Disorder is a presence rather than an absence, a presence of information.

Disorder and order

Order in the discourse of distance education is something that is valued. It must seem incongruous to designers of distance education units to associate highly ordered systems with low information and disorder with high information. This is perhaps the most alarming of the ideas of chaos science, as Katherine Hayles reflects on its significance:

> When an opposition as central to Western thought as order/disorde. is destabilized, it is no exaggeration to say that a major fault line has developed in the foundations of the culture (Hayles 1989, p.313).

The important property of disorder or chaos as it is understood is that it is not the same as randomness in which any state or path is possible, rather, nature chooses only a few of the infinity of randomly possible alternatives. Chaos is seen as determined unpredictability.

The other important feature of chaotic systems is their extreme sensitivity to initial conditions or what is popularly termed the 'butterfly effect'. Historically it was this phenomenon that resulted in the development of chaos theory. Its classic exemplification is in predicting the earth's weather. It takes its popular name from the notion that a flapping of a butterfly's wings in Western Australia could cascade up through the weather system, multiplying many, many times, resulting eventually in a wind storm in Victoria. Such sensitivity to initial conditions makes weather forecasting beyond a few days impossible as Gleick explains:

> The modern weather models work with a grid of points on the order of sixty miles apart, and even so some starting data has to be guessed, since ground stations and satellites cannot see everywhere. But suppose the earth could be covered with sensors spaced one foot apart, rising at one-foot intervals all the way to the top of the atmosphere. Suppose every sensor gives perfectly accurate readings of temperature, pressures and humidity, and any other quantity a meteorologist would want. Precisely at noon an infinitely powerful computer takes all the data and calculates what will happen at each point at 12:01, then 12:02, then 12:03...
>
> The computer will still be unable to predict whether Princeton, New Jersey, will have sun or rain on a day one month away. At noon the spaces between the sensors will hide fluctuations that the computer will not know about, tiny deviations from the average. By 12:01, those fluctuations will already have created small errors one foot away. Soon the errors will have multiplied to the ten-foot scale, and so on up to the size of the globe (Gleick 1987, p.21).

Valuing the order in things like plans in distance education ironically reflects a need to compensate for the less structured, less ordered communication of face-to-face teaching. The high information state that character-

ises proximity education is understood to be best replicated by having unit material that is highly structured, and in a relatively low information state.

There is of course a danger in taking any of these ideas too literally but it is important to recognise the challenge that they represent to the deep-seated ideas of Newtonian determinism in Western thought, the thought that drives and informs our educational theorising and practice both in proximity and in distance education.

There are other important ideas that derive from chaos theory including notions of scaling and strange attractors but there is sufficient of the ideas of the new science of chaos considered here to convey the important challenge it makes to the foundations of Western thought and to help identify what it is that is being valued in proximity education over distance education.

Revaluing distance education

Having identified what is valued in the proximity education/distance education conceptual hierarchy, the next step in deconstruction is to reverse the valorizing, i.e. to make distance education the norm, the ideal and proximity education the aberrant, lower status state. In the terms we have discussed this would mean devaluing immediacy, privileging separation in time and space over proximity, valuing communication between teacher and student that is other than face-to-face.

In this circumstance multiple ideal states might be possible in which separation in time and space is something that is celebrated rather than something to be overcome: the 'tyranny of proximity' comes to mind.[4] Feedback may be seen as more than a simple correcting mechanism but rather as *the* means to achieving complexity and a state that is high in information for both teacher and student. It is interesting that many of the units offered by the School of Education at Deakin University, including the units in educational computing, could be described as disordered and lacking in structure as the unit designers strive to accommodate the professional needs and interests of classroom teachers. The work of classroom teachers is, according to Boomer (who draws on Schön, who cites Russell Ackoff), something resembling the chaos metaphor described in this paper:

> (Teachers) are not confronted with problems that are independent of each other, but with dynamic situations that consists of complex systems of changing problems that interact with each other. I call such situations messes. Problems are abstractions extracted from messes by analysts....(Teachers) do not solve problems, they manage messes (Boomer, 1988, p.3).

'Managing messes' is hardly the description that will ensure long suffering academics working in distance education large pay rises, but pursuing the continuing deconstruction of the binaries that continue to inform and shape our work in distance education appears to offer a rich source of ideas to inform our practice in ways that current theorizing about distance education and proximity education appears to lack.

As Merrell puts it:

> In the present inquiry the underlying assumption has been that we should look for solutions to existent problems, and invent new ones, *ad infinitum*. In order to do so we must at least tentatively adopt some principles with respect to what a solution is, but we should never become dogmatic about these principles. ...
>
> We must recognise that the decision tentatively to adopt a set of principles and to engage in problem solving is always a *pre-rational* decision equally as much as is Buddhist meditation, deconstruction, or poetic accounts of the totality. This *pre-rational* decision making, as well as the motivating factor behind it, fuses the boundary between the scientific and the poetic, mathematics and mysticism, logic and the irrational. The circle, then, can and must be repeatedly opened; *play* can always be resumed with potentially an infinity of new possibilities (Merrell 1985, pp.80-81).

Other (de)constructive thoughts

The implications of this kind of analysis for distance education go beyond reframing the practice of distance education which has largely been the focus of this paper. There appear to be interesting questions for research in distance education if some of the metaphors of chaos science replace those of Newtonian determinism. For instance, how much research in distance education is premised upon narrowing the gap between the ideal of proximity education and distance education? Or how much research is concerned with achieving highly structured communication between teacher and student?

Interestingly this analysis accommodates those practitioners of distance education who understand all of the important problems of teaching at a distance in terms of improving the conduit between teacher and student. This analysis suggests that the conduit is improved not by more and more order as a technophile would argue but by increasing the disorder of the system. The 'butterfly effect' underlines the futility of aspiring to the kind of control that those who seek to build the ultimate instructional package avow.

For those less technically obsessed, there appears to be much resonance between the metaphors of postmodern science and the current trends in

liberal and emancipatory approaches to distance pedagogy and curriculum. Some, such as Green and Bigum (1990), Lather (in press) and Giroux (1988), argue that the resonance can enrich and enhance critical pedagogy.

A final apology

This paper signalled a discussion of educational computing in its title, referring specifically to two off-campus teacher education units. The small number of references to these units does not indicate the important role they have played in providing a concrete basis for reflecting on the ideas of this paper. The units were certainly not designed with the metaphors of chaos in mind. They do however capture some of the interesting behaviours and practices which such metaphors suggest.

Perhaps the most interesting of these is how the units attempt to address the complexity of computing technology itself. Most of the students undertaking these units are novice computer users and face the usual apprehension of coping with an arcane technology that appears to undergo a metamorphosis every other day, if the popular print and electronic media are to be believed. We require students to adopt an approach that is based upon ' ' understandings of how computing professionals cope with a field in wh. .1 it is not possible to know all there is to know. In the face of complexity that appears to grow exponentially, computing professionals have to trust a complex set of human networks to provide them with information that they do not have. Such networks operate at local sites and in geographic regions but also globally through an extensive network of computers that spans most of the world.

While most of our students do not make use of the computers that would give them access to the global network of computing professionals (a very low proportion of our students choose to use a modem for electronic communication), we require that students adopt at least one friendly computer person to support their day-to-day technical difficulties and strongly encourage them to begin building their own local network of computer people with particular expertises.

In these units it would have been pointless to attempt structuring computer technology in more than a general way given the rate at which the the new information technologies change, even in schools. Our students face a highly disordered field, one that is rich in information. What we have tried to do is develop people-centred ways of coping with the complexity and chaos they face.

This is only one small part of what we believe is a unique approach to teaching about computing in education at a distance. We have only begun the project of theorizing this work and this paper represents a very tenta-

tive first step in terms of applying some of these ideas to distance education. Those expecting a blow by blow account of these units will therefore be disappointed and so I apologize and refer them to a much less postmodern account of this work, see Bigum 1990.

Acknowledgement

I wish to thank Bill Green for his enthusiastic encouragement and help in the preparation of this chapter.

Notes

1 Michael Shlesinger cited in Gleick (1987, p.6) lists three anti-Newtonian cousins when he claims that: 'twentieth century science will be remembered for just three things: relativity, quantum mechanics, and chaos'.

2 For example the simple function $y = rx(1-x)$ which might represent the relationship between this year's population (x) of an animal and the next (y). By feeding next year's population, y back into the equation as x we obtain the following year's population and so on. As the coefficient is altered from 0 to 4 the resulting behaviour moves from the simple, stable behaviour that one would expect of such a simple system through stages in which the population begins to oscillate between 2 then 4 then 8 and so on populations, until it finally breaks down into what appears to be chaotic behaviour: determined unpredictability.

3 Claude Shannon published the original theoretical work for this profoundly counterintuitive idea in 1948, it was republished in a book (Shannon and Weaver 1963).

4 Northcott (1984) coined this term in distance education and discussed its origins.

Chapter 8

Reporting research in distance education

Daryl Nation

As THE TITLE suggests this paper is concerned with the reporting processes employed by researchers in distance education. The discussion begins with a review of recent developments relating to research in distance education. This is followed by a critical review of some research in distance education and an exploration of its implications for the reporting process. A contrasting approach, which emphasises the necessity of providing research and theory which assists practitioners of distance education, is then considered. This leads to discussions of the reporting processes in the social and natural sciences more generally, and various attempts to communicate effectively beyond research communities particularly. This is followed by a consideration of some theoretical issues relating to language and text forms. The paper ends by returning to the implications of these issues for research reporting in distance education.

The version of the paper which appears here bears only partial resemblance to its predecessor which was presented to RIDE '89. This version reflects many lines of thought which were initiated and extended at the Seminar. It has benefited from comments by participants and, particularly, Terry Evans. Like its ancestor, this generation has been influenced by serendipitous discoveries and fortuitous circumstances. The paper will have succeeded if its readers are convinced that the simplicity of its title is more apparent than real.

Research emerges in distance education

There has been a significant growth in scholarship in distance education internationally since 1970. Two books by Börje Holmberg (1985; 1989b) provide detailed substantiation of this point; in themselves, they represent the most sustained contribution to this scholarship, by an individual; and, their bibliographies offer details of a comprehensive range of sources in the field. Most of this scholarship has been related directly or indirectly to the manifold burgeoning of distance education in higher education internationally. The increasing strength of the International Council of Distance Education (ICDE), during the 1970s and 1980s, has also contributed significantly to the growth of this scholarship. Its World Conferences have

provided useful venues for scholars to discuss their activities; although, many would say that these conferences have been overwhelmed by the interests and egos of the power-broking administrators who have managed the growth of distance education in institutions of post-secondary education. The ICDE *Bulletin*, which succeeded the International Council of Correspondence Education's (ICCE) *Newsletter* in 1983, has been a venue for both scholars and administrators. National and regional associations of distance educators have made similar contributions in their own areas.

The institution which has been most influential for the development of scholarship in distance education has been the Open University of the United Kingdom (OU). Its Institute of Educational Technology has encouraged its staff in scholarly endeavours and these have resulted in many publications, some of which have been published in journals relating to educational technology. In 1974 Regional Academic Services at the OU sponsored the creation of a journal, *Teaching at a distance;* this journal mutated into *Open learning* in 1986. In 1980 the Australian and South Pacific External Studies Association sponsored the development of *Distance education* which was the first specialist 'academic' journal in the field. This was followed in 1986 by the *Journal of distance education* from Canada. The next year *The American journal of distance education* appeared. Another journal appeared in 1989, *Research in distance education (RDE).* (This list represents those 'specialist' journals to which I have access. It demonstrates a severe case of Anglophilia! A more comprehensive list, which includes 'non-specialist' journals which publish articles on distance education, can be found in *RDE* 1, 2, July, 1989, pp. 16-19.) Since the books and journals referred to above offer a comprehensive coverage, I will refrain from adding a lengthy list of relevant sources. However, it is worth drawing attention to the collection edited by Sewart, Keegan and Holmberg (1983) which contains most of the key sources from the seventies. (For further discussion and references please see Evans and Nation, 1989a, pp. 5-8, 237-252.)

Much of this scholarly activity has been concerned with staking out academic territories for distance education and related endeavours, which proceed under names such as educational technology, open learning, flexible learning, independent learning and so on. Debate about terminology in education has both an important purpose within the educational community and is interesting in itself. Space constraints will not allow a full exploration of these issues here. However, if we are to consider the reporting of research it is necessary to offer some discussion of the place of research and related activities within the variety of scholarship in distance education.

During the 1980s a number of scholars offered reviews of the development of research in distance education (Calvert, 1989; Coldeway, 1988; Holmberg, 1987; Ljosâ, 1980; Morgan, 1984). Erling Ljosâ began an article, which appeared in the first number of *Distance Education*, with a reference

to remarks by the Chair at the International Council of Correspondence Education (ICDE's predecessor) Conference in 1969. 'It is probably safe to say', according to Gayle Childs, 'that if one were to make a list of the areas of notable achievements in the correspondence study field, research would not head the list'. By 1980 Ljosâ was able to claim that 'research activities have been growing in recent years' but, he added cautiously, 'Dr. Child's statement is still safe' (Ljosâ, 1980, p. 99). While not all his professional colleagues may agree with him, recently Holmberg (1987, p. 20) has asserted 'that a research discipline of distance education has emerged'.

By the late 1980s those interested in research in distance education were beginning to organise meetings and other channels of communication with 'research' as the central issue of interest. In July 1988 The Office of Distance Education, at Pennsylvania State University, hosted an American Symposium on Research in Distance Education. Inspired by the confidence which seems to be part of the atmosphere in North America, Michael Moore proclaimed:

> The Symposium was a unique event in the history of distance education. Not only was it the first time that American leaders of the broad field of distance education have assembled to review and discuss its condition with particular reference to research, but also it was the first time that such a group has met for such a purpose anywhere in the world (Moore, 1988, p. 1).

By 1989 The Office of Distance Education had become the American Center for the Study of Distance Education and it has taken a key organisational role in organising a pre-conference workshop held in conjunction with the 1990 ICDE World Conference in Caracas. The organisers' ambitions are reflected in its title: 'Research in Distance Education: Setting a Global Agenda for the Nineties'. Those involved are hoping to use the workshop to organise ICDE's research endeavours in the early 1990s:

> The primary purpose of this workshop is to formulate ICDE's agenda for research for the period 1990-1992. The four projects selected at the end of the workshop will require collaboration among researchers in two or more countries. It is hoped that these will qualify for preliminary funding as official ICDE projects (ICDE/ACSDE, 1990).

In April 1990 the first issue of the quarterly journal *RDE* was released to an international readership. *RDE* is sponsored by the The Centre for Distance Education at Athabasca University and it aims to be 'a forum for the discussion of issues surrounding the process of conducting research in distance education' (Rubin, 1989, p. 1). It has been able to publish a range of articles, notices and reports which conform to its objectives and it appears likely to continue.

The Research in Distance Education Seminar (RIDE '89), at which the ancestor of this present paper was presented, provided Australian re-

searchers with their first venue to focus on research and related issues exclusively (Evans, 1990, p. 8). The book which hosts this chapter will be used as part of the Research in Distance Education unit in the Deakin University/ University of South Australia post graduate courses in distance education. No doubt it will also be useful to other readers both nationally and internationally. There is a RIDE '91 planned, which will provide venue for further exchange of knowledge among researchers in this country. Clearly, Holmberg is at the least partly correct: there is a (sub) discipline of researchers in distance education.

What kind of research? Who by, for whom?

A consideration of the reviews of research mentioned above and two chapters in this book (Chapter 2 by Alistair Morgan and Chapter 10 by Ted Nunan) will assist us to deal with the types of research which have been and should be practised with regard to distance education. They will also help us to consider the backgrounds and contexts of the researchers and the requirements of the people to whom their results are addressed. Each of these issues is a necessary preliminary to the main objective of this discussion: a consideration of the processes of research reporting.

To commence these considerations I would like to refer to a single-sheet questionnaire which arrived with the July, 1990 number of *RDE*. The questionnaire was initiated by Dan Coldeway from The Centre for Distance Education at Athabasca University. It objectives are stated on the face-page:

> We are attempting to empirically determine the extent and type of research being conducted in distance education worldwide....A summary of the data will be reported in this publication and presented at the ICDE pre-conference meetings on Research in Distance Education in Caracas, Venezuela in November 1990.

On the reverse-page there are eight questions under a heading: 'Determining Strategies for Research in Distance Education'. Question (1) asks: 'How would you categorize your involvement in Distance Education?' It requests responses in the categories: 'Researcher', 'Practitioner', 'Administrator' or 'Mixed' (allowing for 2 or 3 combinations of the preceding three). Question (2) asks: 'In which sector of Distance Education do you work?' It requests responses in the categories: 'Higher Education', 'K-12', 'Business' and 'Government'. Question (3) asks: 'Do you read the literature in Distance Education?' It seeks a yes/no response and provides three lines to 'List Primary sources'. Question (4) asks: 'What other professional literature do you read?' and offers one and a half lines for a response. Question (5) asks: 'How useful is the existing research literature in Distance Education?' and seeks responses in four categories: 'Not useful', 'Somewhat

useful', 'Useful' and Very useful'. Question (6) asks: 'What problems are there with the existing research in Distance Education?' and provides two lines for a response. Question (7) asks: 'What questions do you want to see answered through research in distance education?' and provides two lines for a response. Question (8) asks: 'Do you engage in research in distance education?' It seeks a yes/no response and offers two lines for a description.

What does this questionnaire tell us about the state of research in distance education? Immediately, it takes me back Morgan's presentation to RIDE '89 (Chapter 2), where he referred to the almost reflex reactions of the 'survey researchers' in his Institute when confronted with a requirement to undertake evaluation research regarding a home computing project: 'When do we want to send out the surveys?'. Morgan finds this blind faith in positivist social science all too common, but unconvincing. He discusses the development, achievements and weaknesses of a qualitative tradition in research on distance education which offers a radically different alternative to that of the surveyers.

Like all questionnaires, Coldeway's rests on the assumption that the researcher who constructed it and the respondents to whom it is addressed have a shared understanding of the meaning of its key terms. Any reading of the questionnaire suggests immediate problems for an international group of respondents. What does K-12 mean? I presume this refers to those who work in what Australians refer to as pre-schools, primary schools and secondary schools. How would an Australian who works in a technical and further education (TAFE) college respond to Question (2)? Some educational bureaucrats and many élitists in the universities would be horrified if a TAFE teacher, administrator or instructional designer had the temerity to tick the box marked 'Higher Education'. Of course, if 'higher education' is understood as all institutional education which occurs after the final year of secondary schooling an Australian TAFE 'practitioner' could tick this box. Few Australian TAFE teachers, however, would expect to be referred to as practitioners.

Regarding Questions (3), (4) and (5), just what is 'the research literature in Distance Education'? Respondents would have a very broad range of publications in mind, if they operated on assumptions based on the two lists in *RDE* 1, 2, July, 1989, pp. 16-19 under the headings: 'Publications which are devoted to the theme of distance education' (34 listed) and 'Publications which will accept an article directly related to distance education' (50 listed). If they had my reading habits they would have a much shorter list. In response to Question (4), I would list sociological, educational and cultural journals which, incidentally, are not contained in the *RDE* lists. There is, surely, no international agreement on what constitutes the research literature in distance education. Just as surely, there are those who would presume to make authoritative pronouncements in this regard.

Respondents' definitions of research would certainly have an important influence on their responses throughout the questionnaire. The questionnaire offers no operational definition of research! The Macquarie Dictionary, which is my first authoritative source on word meanings, offers an instructive definition: 'diligent and systematic enquiry or investigation into a subject in order to discover facts or principles' (Delbridge, 1987, p. 1446). My own definition, with regard to research in distance education, is distinctly catholic. For example, I would want to describe as 'research' all of the following: surveys such as Coldeway's, evaluations which teachers may undertake on their own courses, the studies of students' responses to teaching materials and other forms of tuition such as those carried out by Morgan and his colleagues, studies of costings of teaching materials development and tutorial provision. The list should be immense. There are many things which we need to know about distance education and many different ways of finding them out!

The structure of the questionnaire suggests the likely text form which will be used to report on details the information collected. 'A summary of the data will be reported': the ticks in various boxes will be be summed up, the two line responses will probably be coded into categories, which could also be summed up. In all probability, various tables will order this information on the page. Logically, little more would be possible. Possibly, any discussion may make claims that these data give an empirical representation of the organisational location, reading habits and research priorities of distance educators worldwide. Such claims are predictable, not on the basis of the information which will be collected, but on the basis of the habits of positivist researchers.

A close reading of Coldeway's(1988) paper, based upon his address to the American Symposium on Research in Distance Education, reveals that he does not share my definition of research. He begins with an appeal to positivist mythology. Drawing upon Jacob Bronowski, he makes the familiar distinction between metaphysical and scientific conceptions of truth. The former is based upon faith, belief and authority and the latter upon a process of enquiry. He appears to be concerned that the metaphysical approach still dominates 'educational research in general and distance educational research more specifically'(1988, p. 46). He proceeds to a shadow boxing exhibition in the arena of the 'qualitative-quantitative debate'. He is dismissive of those who see any value in this debate for researchers in our field:

> There has been considerable discussion among researchers, both in educational psychology and within the distance educational research community, regarding the strengths and weaknesses of qualitative versus quantitative approaches to research. Much of this discussion is highly philosophical and deals with issues like the nature of human behavior, empiricism versus phenomenology, and the like. As a result such a discussion often appears to have little relevance to the actual

> conduct of research and/or the importance of research methods for dealing with particular problems (Coldeway, 1988, p. 47).

Without explicitly expressing the point, he appears to believe that while quantitative research is scientific, qualitative research is not. He offers a definition of 'scientific' research in the passage quoted below:

> ...research within any scientific context typically (and traditionally) is concerned with three issues: the scientific importance of the data and results, the reliability of the data, and the generality of the data. These issues are independent of methodology. It is important to deal with trade-offs between them in designing research, yet they should all concern the question being addressed.... it is clear that the judgement at each of the three levels can be a function of fads, prejudices, and values of the society in which the experiment was performed and the values and prejudices of the experimenter (Coldeway, 1988, pp. 47-48).

I understand that data and results refer to the same phenomena: facts gathered by careful and systematic methods. Is he using 'experiment' as a metaphor? Does science rely only on experiments for its facts? His views are not clear from the paper. I doubt that I am the only potential respondent to the questionnaire who would question the validity of his position on the nature of science and research.

Coldeway makes a distinction between research and evaluation which appears to be based, in part, on his understanding of the nature of social science:

> Research and evaluation share many common attributes and methods. Issues like reliability and usefulness are common to both approaches. However, confusion regarding the goals of each approach frequently surfaces in discussing distance educational research. The confusion is best discussed by example. At a recent meeting of a major distance educational organization one delegate asked if there was research dealing with the effectiveness of distance educational methods in reaching native populations. One person answered that he had read of some work done by a particular organization that appeared to be having good results. Another person indicated that reports were coming from another organization that should be of interest to the delegate. *This author would suspect the reports are not examples of distance educational research.* Hopefully they are examples of distance educational evaluation and as a result have people involved. However, it is *unlikely* that they were done with a *research focus in mind* and as a result *probably* have little in the way of external validity, are not linked to existing research on native people, and *perhaps* do not reflect an interest in providing information for anyone not connected with the program being evaluated.... The answer to the delegate at the distance educational meetings should be: 'if you want to know about what happened when attempts were made by others to conduct distance education for natives, ask for evaluation reports done in that area. On

> the other hand, if you are interested in the factor[s], features and variables that affect native people and their interaction with systems like distance education in a general sense, you may benefit from a review of the research literature' (Coldeway, 1988, pp. 48-49 emphases added).

This is not scientific analysis! As the text suggests, the analysis is based on supposition. Potentially useful research reports are dismissed as having little value beyond local circumstances, on the basis of Coldeway's assumption that they may be 'evaluation' rather than 'research'. The distinction he makes between evaluation and research is difficult to grasp: it seems to rest on assumptions about how to generalise validly from particular cases. He provides no detailed analysis as to why this is only possible in 'research'. His analysis rests merely upon the scattering of apparently scientific terms such as 'research literature', 'validity', 'prediction' and 'variables' throughout; there is no coherent statement of the 'scientific research' case.

What problems of validity are there for Coldeway's study if many of his respondents do not share his understanding of the term 'research'? Hypothetically, it can be suggested that many respondents will have quite different understandings than his own. His research tool does not allow for this problem. On this basis, it would be invalid to aggregate the responses to many of his questions. For example, many may answer 'yes' to Question (8) on the understanding that their research (which Coldeway may regard as evaluation) fits into the category. It could be expected that any analysis which he may make of the data will probably rest upon the understanding of research expressed in the paper reviewed above, therefore he may unwittingly classify 'evaluation' studies as 'research'.

Despite my reservations about his approach to social science generally and the questionnaire under review specifically, I would not dismiss this study as valueless. Presumably the questionnaire has been distributed to a wide range of people associated with distance education internationally. Given a sufficient response rate, it could yield useful information relating to the following: the major journals and other sources used, the types of research being undertaken and a superficial identification of issues which need to be researched. Any information collected would need to be interpreted on the basis that respondents do having differing understandings of the key terms. As useful as these few simple facts could be, they in themselves, or any interpretation of them, could hardly be regarded as making a substantial contribution towards setting a global agenda for research in distance education.

There is a more fruitful and rigorously empirical method for establishing an understanding of the scope and nature of the research which has been completed, its implications for future research and the issues which those in distance education would like placed upon the research agenda. This

could be done, and may even have been done, by reference to the information held by services such as the Open University International Documentation Centre on Distance Learning. The form of 'meta-analysis' advocated by Mc Issac (1990) could provide a useful methodology.

I suspect that two of Coldeway's objectives are: to attempt to marginalise qualitative research, and to question the usefulness of evaluation research. There is evidence to substantiate this claim in his paper, but a thorough confirmation would require more evidence in the context of a dialogue with him. In my view, both evaluation and qualitative research, which are not mutually exclusive, have demonstrated their usefulness to distance educators. Morgan's chapter in this book deals with some of the valuable studies and with the reasons for the slow progress which qualitative research has made in our field (see also Morgan, 1984). Nunan's chapter deals with a case study in which researchers, who while embracing competing research paradigms, co-operated in the creation of a course in research methods. The case study reveals just how difficult it is to achieve constructive dialogue between these competing social scientists. Evans and Nation (1987a; 1989b) have argued that the competing approaches within distance education reflect similar differences within both educational theory and research, and social theory and research more generally. Many researchers have argued strongly for qualitative research, without denying that quantitative approaches can also have validity.

From the perspective of this paper, the most valuable contribution to the discussions of the place of research in distance education has been offered by Jocelyn Calvert (1989) in a keynote address to the ICDE World Conference in 1988 entitled 'Distance education research: the rocky courtship of scholarship and practice'. The title reflects her central argument accurately. Clearly, her approach is grounded in an intimate understanding of both scholarship and practice. 'In distance education', she asserts, 'research is the place where scholarship and practice meet and the occasion is frequently fraught with tension' (Calvert, 1989, p. 37).

Her analysis begins with a consideration of an audioconference in which distance educators (presumably from Canada) were discussing research. (Was this a precursor to the global agenda setting workshop?) She captures the atmosphere economically and sympathetically. There were cross-paradigm flurries by various researchers reflected in references to cybernetics, critical theory, reflective practice and, inevitably, to quantitative and qualitative methods. While the participating practitioners, administrators - instructional designers and faculty members - asked for research which would assist their work (Calvert, 1989, pp. 38-39).

It is difficult to do justice to this carefully crafted discussion in limited space and I will not offer a comprehensive summary; rather, I would urge you to read it attentively and I will dwell upon those issues which relate closely to our purpose. Calvert steers clear of paradigmatic warfare and

chooses instead to create an analytic framework which allows her to maximise the actual and potential relationships between scholars and practitioners. She advocates an engagement between them. For practitioners, this involves a willingness to become 'not only informed consumers of research, but active partners in the process' (p. 39). For researchers this means improvements in the 'education and presentation' offered to those who work in the field. Regarding 'clarity of presentation' she contends:

> Academic writing, aiming at precision, has a reputation for obfuscation and ... the distance education ... literature is not free from this tendency. In a multi-disciplinary field there is the added problem of lack of communication among the various fields from which distance educators and their theoretical constructs are drawn. It is obvious that writers about distance education should follow the same guidelines we set for design of our courses. These include simple and direct writing, the use of analogies and concrete examples relevant to the reader's experience, and explanation of any terms and concepts with which the reader may not be familiar (Calvert, 1989, p. 44).

To this she adds the necessity to develop simple forms of basic training in research methods and greater attention to co-ordination of access to the literature. She endorses the extension of forms of professional post-graduate education, such as the diploma course which was begun by South Australian College of Advanced Education (p. 44) and which has now been expanded to include a masters degree in conjunction with Deakin University .

She concludes with the suggestion:

> Practice has a cause to serve and scholarship wants to analyse it. There is room for both and a need for continuing communication between the two groups. To the extent that practice is willing to embrace reflection and analysis and scholarship is able to relate its constructs in meaningful terms to a complex practical world, we can look forward to a long and productive association (Calvert, 1989, p. 44).

From my perspective, the one major weakness in Calvert's analysis is the lack of recognition for the possibilities which action research provides for improving the relationship between practice and theory. Morgan refers briefly to some possibilities in his chapter. Following the approach articulated by Carr and Kemmis (1986) and Kemmis and Mc Taggart (1988), practitioners can become researchers. This approach was adopted by the eleven distance educators who chose to work together to develop critical reflections on their practice (Evans and Nation, 1989a). As a participant in this project I remain committed to this approach and it is pleasing that the critical reaction to this project has been so positive from researcher(s) / (and) practitioners in our field. Contrary to Coldeway's claims, the fruits of these types of research are useful both to their creators and to their professional colleagues at a local level. This approach looks outwards to other research and practice and it draws upon concepts and theories which

provide a substantial basis upon which to generalise to other contexts. Practitioners 'looking in from the outside' can easily travel the mental pathways between the experiences described and analysed and their own. Objective researchers could find the following: descriptions of the research contexts, and facts which are carefully recorded and which are capable of both verification and linkage to relevant theory and concepts. Practitioners and researchers, alike, can engage with analyses which have already been subject to the strictures of a very critical community of scholars.

Improving research reporting in social sciences

It is certainly not my intention to advocate the critical reflections model as the only valid form of research and reporting in distance education. Rather, I would endorse Calvert's analysis, as a useful broad base upon which to found approaches to reporting which will communicate the fruits of research to the diverse group of practitioners for whom research should ultimately exist. Approaches such as Coldeway's, rest upon assumptions about the capacity of practitioners or their agents (theorists?) to retrieve relevant knowledge from a research literature which exists primarily for researchers. These approaches make dubious assumptions about the nature of science generally and social science particularly. They fail to recognise that scientific researchers, in recent years, have put considerable effort into broadening the range and power of their communication with publics which have the need and the right to know. Further, as Calvert recognises, many of the techniques employed in these new approaches to scientific communication owe a substantial debt to educational theory and practice; distance educators have a lot to contribute towards, and much to learn from, an engagement with scientific researchers who are interested in effective communication.

In contemporary social science there a various conventional forms for reporting research. The two most common are the conference paper and the journal article. Published and unpublished reports are also important forms, as are published books. In the near future, it is likely that computer databases will also be used as important vehicles for the communication of research reports. In accord with scientific canons, the most prestigious form of research reporting is the *refereed article*: a text in which there has been a pre-publication review by appropriate disciplinary colleagues to check facts and theoretical analyses. As these rules suggest, refereed articles are addressed essentially to disciplinary colleagues; they communicate effectively to those with a sound knowledge of the discipline; generally, they are not an effective form of communication with those we have termed practitioners. The rules of action research provide for a radically different approach to communication with practitioners: the texts which report the facts collected and analysed are designed for effective communication amongst the researching practitioners.

There are various conventional forms of synthesising the results of research for communication to 'outsiders' in contemporary social science. Textbooks and other related text forms, used in the teaching process, are designed to communicate to students knowledge generated from research. Journalism, in all its modern forms, has created text forms such as books, newspaper and magazine articles and radio and television programs. These can be used by those who want to communicate the products of research to wider audiences. Researchers in distance education, who are committed to communicating their knowledge to practitioners, need to give careful attention to the principles and practices of these text forms. Let us consider some examples of the use of these text forms to communicate the fruits of social scientific endeavour.

In 1980 the Australian Institute of Family Studies (AIFS) commenced operation under the auspices of the Family Law Act, funded by the Commonwealth Government. The Institute has defined its major functions as:

> *Research* To study and evaluate matters which affect the social and economic wellbeing of Australian families.
> *Advice* To advise Government and other bodies concerned with family wellbeing on issues related to Institute findings.
> *Promotion* To promote the development of improved methods of family support, including measures which prevent family disruption and promote marital and family stability.
> *Dissemination* To disseminate the findings of Institute and other family research (AIFS, 198[illegible]).

The AIFS is the major research organisation in Australia in its field. It carries out a research program of broad scope which employs a variety of theoretical and methodological approaches. The results of its own research studies are reported in a variety of ways. Its researchers are encouraged to publish in the conventional academic publications in their fields. The Institute holds regular conferences and seminars where its own researchers present their findings in concert with Australian and international researchers.

Much of this activity fits into the conventional academic mould. However, there is another important and sophisticated side to the reporting process, which communicates beyond the research and academic communities. In the context of a review of the Institute's research program the Director, Don Edgar, has explained why and how this approach developed:

> ... while the research plan was aimed at both identifying and explaining what was happening to the social 'group unit' of the family (a 'pure' research goal), our chosen audience was wider than an academic one. ... the Director had a strong belief in the obligation of researchers to serve as objective critics of society in return for the privilege of their academic freedom and independence, the decision was taken to present the Institute's findings in jargon-free, attractive, easily understood publications and via the mass media. Findings were targeted in

> packages designed for different audiences such as lawyers, counsellors, teachers, parents, and so on as appropriate. This involved a good deal of editing, re-writing, reduction of detailed data tables, re-statement of theoretical explanations in lay terms, and devotion of staff time to media and other dissemination activities. Inevitably, at times, some journalists tended to oversimplify and sensationalise findings, and there was disapproval on the part of some academics disdainful of the 'popularising' strategy or who felt the Institute was too statistical, too empirical, neglecting 'theory' - a very tired old sociological debate (Edgar, 1990, p. 2).

The AIFS produces a thrice-yearly newsletter of substantial proportions, *Family matters*. This journal is dominated by a variety of short articles which provide reports on both research in progress and completed research. These articles are aimed at 'informed professionals' who want to keep abreast of knowledge from research. There are policy oriented discussions, including a regular report from the Director, which usually emphasises such matters. *Family matters* also offers it readers considerable bibliographic information, which relates to the AIFS's information service functions. The research staff and the senior staff are regular contributors to the news media. These staff avoid the possible traps of 'personality' status and the 'promotional push' sometimes associated with commercial publishing and concentrate on the provision of facts and interpretations of them. The AIFS's approach to research and the communication of research findings has much to offer those who wish to reach diverse audiences in an efficient manner, whilst preserving scientific integrity.

During the weeks in which I have been working on the final version of this paper, SBS has been broadcasting the Granada Television series *7 up*. The program takes as its text Saint Ignatius Loyola's proposition: 'give me a child until he is seven and I will give you the man'. It features fourteen children from a range of social backgrounds in England, who have been interviewed at the ages of 7, 14, 21 and 28. The first program was made in the early sixties and preparation for the next round of interviews begins in 1992. Each program confronts the subjects with questions about their attitudes to schooling, their families, social and political affairs, their vocational aspirations and achievements and, in the later programs, their aspirations for their own children.

Many social scientists would not regard the *7 up* series as having a research base. Is a 'sample' of only fourteen subjects an adequate basis upon which to generalise? How were the subjects chosen? Can we assume the subjects will tell the truth to a television reporter? Positivists would ask these and many other questions. The conventions of television reporting, in contrast to social scientific reporting, do not provide an adequate basis for satisfactory answers to such questions. However, the programs themselves provide substantial evidence that their reporters have carried out 'diligent and systematic enquiry ... in order to discover facts' and 'principles'. Furthermore, viewers with a thorough knowledge of relevant research and theory

can see that the series is reporting within a tradition of sociological research into the relationships between social background and educational performance, which commenced in the late fifties and continues today. The theoretical principles reported in the series are quite congruent with the results of thorough research from this tradition. The study reported in *Making the difference* is a well known Australian example of this research (Connell, Ashenden, Kessler and Dowsett, 1982).

The researchers behind *Making the difference* attempted to solve the problems of intellectual accessibility which have been problematic in much social scientific reporting. While they gave due attention to careful recording of methodological procedures, a detailed statement was expressed in an appendix. The theoretical debate central to this area of research is dealt with in clear jargon free prose, with links provided to detailed references in the technical literature; its authors have made many contributions to the technical literature, using the conventions of the genre. In *Making the difference* the burden of the reporting of the evidence, gathered by the researchers, is carried by a text form which owes a great deal to the narrative structures of the novel, high quality journalism and television documentary and drama. For almost a decade, this 'reader friendly' book has served students, teachers, parents, policy-makers and others, with an interest in education and inequality, as a comprehensible introduction to relevant facts and theories of professional and personal interest. Dean Ashenden, one of the research team, has chosen to devote much of his recent professional life to writing articles for magazines and newspapers, which are based on continuing original research and interpretation of the work reported in the technical literature.

Ashenden's journalism, *Making the difference*, the AIFS publications and *7 up* all represent excellent examples of effective communication of the results of social scientific research to audiences beyond the research community. These forms of reporting do not denigrate the esoteric communications which occur amongst researchers for their technical purposes. Rather, they assume that those forms are very effective for the researchers' professional purposes. Practitioners of these approaches contend that more than the conventional school/college textbook is necessary if the fruits of research are to be communicated effectively to wider audiences, such as the 'practitioners' who can benefit from this knowledge.

My own involvement in these kinds of reporting began in 1981 when Terry Evans and I were invited to undertake an evaluation study of a 'Girls' Options Program' in a Latrobe Valley secondary school. An extract from a paper we wrote in 1984, in an attempt to review some of the problems in evaluation research and research reporting, outlines the issues we addressed:

> When the ... teachers approached us, they were not seeking our 'academic knowledge'. Had they wanted that kind of knowledge they

> could have enrolled in one of our courses.... They wanted two forms of intellectual assistance: a 'video' and some help with the 'evaluation' of their program. 'Evaluation', to these teachers, was rather a 'black-box' concept: it was necessary for funding purposes, but they were not sure what it was. To us, 'evaluation' was a method of research from North America: an enterprise in which school 'inspectors' were replaced by 'social scientific consultants'. We could help them with evaluation, we said: we are social scientists and our 'expertise' include[s] evaluation techniques. The teachers, quite rightly, were more concerned with using the state's funds (with the evaluation strings attached) for the educational benefit of their young women students. The 'videos' which the teachers wanted were to assist them in the process of informing the girls about the possible opportunities which were available in areas of the local labour-market not traditionally occupied by women. The teachers wanted their own video version of a media campaign which had commenced in the Valley, in which a number of women activists, 'enlightened' employers and educational advisers were attempting to make girls aware of 'broader opportunities'. To the teachers, the videos could capture the messages of locally successful women which could then be taken back to inform their students.... Well produced videos of this kind were available for hire and we suggested that the teachers could [use] these.... We suggested a video of a different sort: one which would reflect the reality of the program they had developed and which would complement the written and other forms of reporting on the Girls' Program which would be part of the evaluation.... We were happy to have an interesting research project which would allow us 'to do some research' and produce knowledge for our students and others (Evans and Nation, 1984a, pp. 7-8).

The project employed a diverse range of research methods: document analysis, questionnaire surveys, group and individual interviews and observation of students, teachers and parents. Virtually all activities in the Program were video-recorded. These recordings proved to be an additional source of research data. Four forms of reporting were employed: a printed sixty-page report was produced for the school as 'the report' on the evaluation; a half-hour video was created, which complemented the printed report; oral reports were made to groups in the school; and two academic papers were written and presented at conferences, and one of these was published subsequently (Evans and Nation, 1984b). While these various reports can be separated for both analytic and practical purposes, they work together to offer both facts and interpretations which stem from one theoretical and methodological base.

At a much more humble and local level, our project had many similar objectives to those of *7 up, Making the difference* and the AIFS's research and dissemination program. On reflection, we were certainly influenced by these and similar approaches. We were influenced, just as substantially, by our experiences in teaching at a distance, which had forced us into forms of text creation beyond the academically conventional. We are on record elsewhere extending these ideas and working towards the integration of

new forms of theory, research and practice (Evans and Nation, 1989a; 1989b). While the academic sociology which we espouse has been a powerful influence in this analysis, our experiences as researchers and teachers in distance education have been of equal importance.

The staff who work in institutions of higher education normally conceive of themselves professionally as scholars committed to an academic discipline; and, even if reality cannot match the rhetoric, they often regard themselves as researchers in this discipline. In most institutions these academic staff are expected to teach students, but it is only a minority who are prepared to accept that educational research and theory have much to offer them in their teaching practices. In an increasing number of colleges and universities, staff - with various titles - have been employed to assist teachers with their practice. In institutions engaged in distance education these staff have been known as educational developers, educational technologists and/or instructional designers. Most of these consultants, as academics themselves, regard themselves as part of some faction of the discipline of education; they hold research and theory in high regard; they see their role as helping their academic colleagues to put educational theories into practice.

There has been an attempt to professionalise these forms of educational consulting and research. In the South Pacific there is the Higher Education Research and Development Society of Australasia (HERDSA), which caters for the professional needs of many of the staff in 'educational advice' units in the universities and the Australian and South Pacific External Studies Association (ASPESA), which caters for educational developers etc. in distance education. As many readers will know, it is now possible to undertake postgraduate studies in distance education and there are many more occupational categories for which consequent qualifications are relevant. Those practising these new professions have had considerable success, but this has been despite considerable resistance.

In 1987, Michael Parer and Robyn Benson commenced a study which aimed to investigate the policies and practices relating to the preparation of academic staff for distance education within Australian post-secondary education institutions. This study confirms the resistance by most academic staff to professional development associated with their teaching (Parer and Benson, 1988, pp. 20-22). It also confirms that there are prospects for dealing constructively with these problems. Their report advocates approaches which require the consulting professionals to communicate their knowledge, derived from theory and research, concisely and clearly in a team context (pp. 42-44). Complementary to this would be printed and audiovisual materials developed from a critical review of sound practice.

In the wider field of university teaching and researching, HERDSA has produced a series of short handbooks (the *HERDSA Green Guides)* , which

offer practical advice which is founded on relevant theory and research. While I am not aware of any research on the use of these guides within teaching contexts, from personal experience it appears that they are very useful to teachers with little time for and/or interest in the detail of educational theory. As a text form they are worthy of attention from those committed to communicating the products of research to an audience of practitioners.

In her chapter in this book (Chapter 14), Diane Thompson has discussed the relationships between formative evaluation research dealing with teletutorials and the practice of teaching staff at Deakin University. This project has already yielded a very useful evaluation report and there is a handbook for staff who wish to use teletutorials (Grace and Thompson, 1989; Thompson, 1989). The idea for the brief handbook came from an advisory committee, comprised largely of members of teaching staff, which had been set up by the researchers with two basic objectives in mind: to inform the researchers of the teachers' needs and to provide the researchers with informal means of communicating their findings to those who could use them. This research, which demonstrates that students' perceptions of teaching techniques are not necessarily the same as those of the teachers, has important implications for those who wish to communicate messages which may disappoint committed professionals. Is it possible to do this in a handbook? Is this a job for a 'sensitive' educational developer? What ever the answers may be, it would appear necessary that we construct means of communication which can do these jobs effectively. I would have little faith in the capacities of conference papers and journal articles as adequate methods of communication for these purposes.

Social science, it appears, can provide some practical lessons for those who wish to communicate research results to audiences outside the research community. Most of these lessons have been created by social scientists who are critical of positivism. Positivists have great faith in the techniques of natural scientists; what do the latter offer in this regard?

Lessons from natural scientists

The centre-piece of reporting on research in the natural sciences is 'the scientific paper'. Robert Day's authoritative book, *How to write and publish a scientific paper*, provides a comprehensive account of the principles and practices of the genre. As a definition of the 'valid scientific paper', he offers one published by the Council of Biology Editors, which he was involved in creating:

> An acceptable primary scientific publication must be the first disclosure containing sufficient information to enable peers (1) to assess observations, (2) to repeat experiments, and (3) to evaluate intellectual

> processes; moreover, it must be susceptible to sensory perception, essentially permanent, available to the scientific community without restriction, and available for regular screening by one or more recognized secondary services...(Day, 1983, p. 2).

Day (p. 6) recommends reserving the term 'scientific paper' as the referent for the 'original research report'. In so doing, he recognises the existence of many other important forms of communication amongst scientists, such as 'review papers', 'conference reports' and 'meeting abstracts'. These text forms are part of a secondary literature and scientific papers constitute the primary literature. Whilst wanting to emphasise the pre-eminence of the latter in scientific communication, he deals comprehensively with the former and includes advice on thesis writing, book reviewing and oral presentation by employing adjusted forms of 'the rules applying to primary scientific papers' (Day, p. xii).

He recognises that there may be exceptions, but he contends that his approach conforms to a generally accepted pattern which is becoming increasingly uniform in natural sciences and in 'many other types of expository writing' (Day, 1983, P. 4). This 'eminently logical' text form operates as follows:

> Whether one is writing an article about chemistry, archeology, economics, or crime in the streets, an effective way is to answer these four questions in order: (i) What was the problem? Your answer is the *Introduction*. (ii) How did you study the problem? Your answer is the *Materials and Methods*. (iii) What did you find? Your answer is the *Results*. (iv) What do these findings mean? Your answer is the *Discussion* (Day, 1983, p. 4).

For a completely scientific approach, reporting researchers have only to use the above in conjunction with the following: inclusion of an appropriate title, authors list and addresses list, employment of the approved forms of acknowledgement and reference citation and use appropriate forms for graphs, tables and illustrations.

In a radio program broadcast on the BBC twenty years before Day's second edition was published, the Nobel Laureate in medical science, Peter Medawar, asked: 'is the the scientific paper a fraud? Medawar's critique recognised Day's portrayal of the scientific paper as an accurate one, for his own contemporary period; indeed, he used very similar language to Day's in describing its form (Medawar, 1962 p. 377). However, his purpose was to reform the nature of the scientific paper as, from his viewpoint, its traditional form reflected scientific mythology rather than practical reality. Its structure represented the aspirations of Mill and Bacon for inductive science. Science as practised happens more deductively, 'all scientific work of an experimental or exploratory character starts with some expectation about the outcome of the inquiry' (Medawar, p. 378). Hypotheses derived from these expectations become the bases of the

rigorous testing which becomes the scientific work to be reported. Medawar advocated forms of reporting which more accurately reflected these realities.

Medawar's approach has not become dominant in the technical literature of natural sciences. Day's approach may be radically hardline but it represents orthodoxy. It is an approach which attempts to take a position against the humanities and to emphasise technical characteristics. He proclaims:

> ... I take the position that the preparation of a scientific paper has almost nothing to do with literary skill. It is a question of *organization*. A scientific paper is not "literature". The preparer of a scientific paper is not really an "author" in the literary sense. In fact, I will go as far as to say that, if the ingredients are properly organized, the paper will virtually write itself. Some of my old-fashioned colleagues think that scientific papers should be literature, that the style and flair of an author should be clearly evident, and that variations in style encourage the interest of the reader. I disagree. I think scientists should indeed be interested in reading literature, and perhaps even in writing literature, but the communication of research results is a more prosaic procedure.... I once heard it said: "A scientific paper is not designed to be read. It is designed to be published". Although this was said in jest, there is much truth in it. And, actually, if the paper is designed to be published, it will also be in a prescribed form that can be read and its contents grasped quickly and easily by the reader (Day, 1983, p. 5).

It must be remembered that Day is concerned with the methods of communication within scientific communities. He is not addressing the issue which is central to this discussion: how should researchers report their work to ensure its effective communication to the practitioners to whom it offers useful knowledge. However, his views and priorities are shared by many of those social scientists for whom research is an end in itself. Sternberg (1988) offers a general account from this perspective and Coldeway's views, discussed above, are an example from within distance education. Before turning to the work of some natural scientists who have offered useful ideas relating to the communication of scientific work to the laity, I would like to divert in order to share with you, some of the fruits of an interesting discovery.

In early November 1989, the version of this paper which was presented at RIDE '89 was a series of unstructured thoughts with some connection to the theme implied in the title. While perusing the new arrivals shelves in the Monash University Bookshop on 8 November 1989 I had the good fortune to discover a copy of *Life among the scientists: an anthropological study of an Australian scientific community* (Charlesworth, Farrall, Stokes and Turnbull, 1989). Its reputation required immediate purchase and reading. It soon became obvious that the work contained various lines of thought germane to my proposed paper for RIDE '89. Some of these are

reflected in this paper more dimly, but two gripped my attention with the developing paper in mind: the researchers' account of the scientific reporting process, which I will deal with shortly; and the text style adopted by the authors, which I will deal with in the next section.

The central purpose of the book, and the research project which it reports on, is expressed in its first sentence:

> This is an attempt to understand how a small group of scientists at a particular research institute, and in a specific scientific field, do science, as distinct from what received scientific mythology *says* they do and what philosophers of science and other science watchers *suppose* they do (Charlesworth and others, 1989, p. 1).

The institution studied is the Walter and Eliza Hall Institute. The study originated from an address given at an Institute staff seminar by a member of the research team. The address was based upon *Laboratory life: the social construction of scientific facts*, a study of the Salk Institute, by Bruno Latour and Steve Woolgar. Particularly, the talk 'focused on attempts to approach science, and scientists, in an "anthropological" way - viewing scientists as though they belonged to a "tribe" with a distinctive "culture" of its own' (Charlesworth and others, 1989, p. 3).

In a middle chapter, 'generating data', the research team deals with 'the scientific paper' - the major vehicle for the publication of research results in science. 'Scientists', they observe, 'mostly say they dislike writing' (Charlesworth and others, 1989, p. 168). Yet, as Day's work confirms, writing for publication is regarded as an important outcome of the research process; it puts experimental results and the scientists' discussion of their theoretical significance into the public domain and, thus, makes them available for critical scrutiny and experimental replication. Charlesworth and others (1989, p. 171) repeat Day's reported jest that 'a scientific paper is not designed to be *read*. It is designed to be *published*". However, they add a fascinating twist:

> If a paper is published, then it will be because the editor of the journal concerned has been advised of its acceptability by at least two specialists. The identity of these referees generally remains unknown to the authors of the paper - though they usually see the written comments made on their paper, especially if changes are demanded, as they often are. So the scientists setting out to write up their results are really writing for these anonymous referees. This is all the more true in the light of an astonishing statistic. Assuming that one may measure how widely a paper is read by how often it is cited in later work, it has been found that the great majority of papers receive only one or even no such citation (Charlesworth and others, 1989, p. 171).

This point is strengthened by another of their conclusions:

> The scientific paper is not the main form of scientific communication. In

> science, information flows down the informal channels of 'invisible colleges'- as Crane calls them. Pre-prints of papers submitted to, but not yet accepted by, journals are distributed by their authors to all those they know who are working in the same field. Maybe more important still are the direct personal contacts made at conferences, during visits to other laboratories, by letter or telephone or the 'grapevine' (Charlesworth and others, 1989, p. 170).

If Charlesworth and others are correct, Day's carefully prepared advice is more useful to scientists learning the rules of the 'objectively measured' publication game, than it is to those who wish to know how scientific ideas are communicated within research communities. The scientific paper is a textual artefact which is used primarily as a measure of research productivity. It also plays an important part in what Charlesworth and others (pp. 98-121, 269-272) term, 'the myth of objectivity and the impersonal scientist'. Their research suggests that personal, subjective, political and, even, accidental factors play an important part in scientific work. Most of the scientists they studied did not accept their interpretation of the evidence which supports this view, although a few did. Most wanted to preserve the scientific myth.

How is this knowledge relevant to this paper? It has two relevant aspects. First, it confirms that social scientists would be unwise to emulate slavishly 'the scientific paper' as a method of reporting research, if they are interested in communicating effectively with practitioners and the public more generally. Second, it suggests that social scientists may not be by themselves in the scientific community, with any realisation that objectivity is an impossible goal.

The physicist John Ziman has dealt with both of these issues in his book *The force of knowledge*. The book grew from a series of lectures he gave to science students at the University of Bristol in the early 1970s. It reviews scientific discoveries and methods, the ideas and influence of individual scientists and methods of scientific communication in relation to the historical development of cultures, societies, economies and technologies. Ziman (1976, pp 299-300) believes that objectivity should be pursued even though it can never be attained in a complete sense. 'In the end', he suggests, 'we are bound to rely upon our own judgement of the validity of each observation and deduction, and we are all subject to the intellectual climate of our own times'. Within a comprehensive discussion of the emergence of scientific communication, Ziman (pp. 90-119) is able to confirm the views of Charlesworth and his colleagues about the importance of informal communication. Indeed he goes a good deal further. While recognising the problems of 'sensationalism' and the 'cult of the flamboyant personality', with regard to the media and the low level of scientific understanding amongst citizens, he advocates more effective communication with the public by organised science and the need for high quality popular science (pp. 112-19). His own book is an object lesson in this regard. His work is not unique in contemporary natural science, since

there are many and diverse examples of natural scientists communicating effectively with the public.

Gustav Nossal, as the Director of the Walter and Eliza Hall Institute, is concerned mainly with administrative, entrepreneurial and political affairs within and without his research organisation. While he rarely spends any time at a laboratory bench these days, he has a distinguished record as a research scientist. He is also a polished exponent of popular science. He appears frequently on the broadcast media to explain scientific knowledge and to debate controversial issues. He writes books addressed to the well informed citizen (Nossal, 1984). The principles he practises in his communications with the public are in accord with those expressed by Ziman (eg. Nossal, 1984, pp. 129-130).

The ABC Radio program *The science show*, produced and presented by Robyn Williams, is an enduring example of effective communication of scientific knowledge. The program provides listeners with regular opportunities to hear exposition, discussion and debate from scientists of all sorts. Many of these pieces are then made available publicly via audio cassettes and books. Williams has developed a style, based on thorough preparation and sound interviewing technique, which allows even the less articulate to speak sensibly to the public. The program also provides much more extensive explorations such as those by the physicist Peter Mason (1979, 1981) on the development of rubber and electrical technology.

The doyen of the popularisers of science is Jacob Bronowski, who is well known for his television series and consequent book, *The ascent of man*. Bronowski enunciated as his credo: 'The act of creation is, I am sure, the same in science as in art. It is a natural, human, living act' (Bronowski, 1977, p. 18). As a polymath, Bronowski was able to take voyages through vast artistic and scientific territories with ease; he could offer guided tours to those interested in joining him. I want to turn shortly to his theory of language, which both explains his own ability to communicate the essentials of complex bodies of knowledge to others, and offers us some assistance with the basics of scientific reporting.

It is clear that the research reporting techniques practised by natural scientists are broad in scope and purpose. The scientific paper does have an important place in communications within research communities; but it is not designed to be, or is it used as, a means of communication beyond these communities and, its importance in this regard is far from complete. The approach to communication through popular science is in accord with corresponding examples in social sciences, which were discussed earlier. Natural and social scientists who seek to move beyond a crude understanding of 'objectivity' seem to be in the best position to communicate the results of research beyond their immediate professional peers.

The language of reports

This is not the context for a lengthy discussion of theories of language. However, given the emphasis which has been placed upon text forms above and the obvious centrality of language to reporting, I would like to offer a few pointers to those who may be interested in deeper exploration. Let us begin by returning to Bronowski.

Bronowski's theoretical interest in language grew out of his 'special interests ... the language of science and the language of poetry' (Bronowski, 1977, p. 104). He read widely and critically in fields such as anthropology, ethology, linguistics, philosophy and psychology. He also completed a critical study of William Blake's poetry. He summarises his theory thus:

> Before I put a sentence or a thought together from its constituent words, I have to be able to take my experience apart into words or other images and symbols. The ability to use language has two components: an analysis of experience into parts (which acquire in their usage an objective status equivalent to things, that is, are reified), and a subsequent assembly of the parts into different imaginary constructions. This is the double activity of *reconstitution*, and we can see how it is carried on in contemporary practice - in the language of scientists, and of children - and then can project the process back to the beginnings of language (Bronowski, 1977, pp. 146-147).

For Bronowski (pp. 104-154), these linguistic fundamentals have both biological and cultural bases. The inbuilt delay in communication in the human nervous system is crucial, as are abilities with symbol generation and vocalisation. The ability to use language as 'a tool to make a tool' leads to culture: the ability to pass on symbols and concepts (p. 128). Human communication differs from the other animals which can simply command. A scientific theory has to be created rather than discovered! We understand nature by analogy. This does not deny the necessity for precise measurement and communication of results and interpretations using the 'language of science', but it means that those making creative breakthroughs will need to think in terms of another related language. It means also that effective communication with 'outsiders' must, similarly, employ language which they can understand (pp. 129-31).

Bronowski's ideas are in sympathy with the theories employed by the social psychologists and sociologists which Evans and Nation (1989b) have discussed in the context of the importance of dialogue in practice, research and theory in distance education. These approaches wish to emphasise the importance of the processes through which text forms are constructed by authors and reconstructed by readers. Research and education are both processes in which meaning making and re-making are central.

Life among the scientists deals with these issues and its authors refer to the work of Mulkay which also has been very influential on Evans and Nation.

In a reflective piece Charlesworth and his fellow authors suggest:

> One of the main figures in the sociology of science is the English scholar Michael Mulkay, and I receive his latest book *The Word and the World* with much interest and speculation. Mulkay is concerned with the 'discourse' of scientists i.e. how they talk about science, talk to each other about their scientific projects, and talk to people outside the world of science. He thinks that in this way it is possible to see how scientists 'construct' science. He says that his book is a study of 'the textually constructed character of the social world of natural science'. At the same time he is also concerned with the appropriate style for a sociological account of science which allows for a reflective dimension, i.e. where the sociological observer sees himself or herself as also a part of the 'field' being studied - where the observer is observing herself observing. The usual style of scientific monograph - the 'empiricist monologue' as Mulkay calls it - does not allow for this, and he argues that it is necessary to look for alternative styles of sociological accounts. Mulkay cleverly uses dialogues, exchanges of letters between scientists, transcripts of tape-recorded discussions, Borges-type fantasy, and a parody of Nobel Prize presentation to make his point. I read this book avidly since the question of style - how to write up this project - preoccupies me. But while it is full of illuminating points, it is rather meta-sociological in style and would, I think, be accessible only to sociologists. Certainly I can scarcely imagine any of the scientists here at the Institute understanding it or even being interested in it. What I must do is to find a style that will enable me (a) to give an account of the scientific life; (b) to include myself as an observer in that account; and (c) to present such an account so that it will be accessible to the scientists themselves (Charlesworth and others, 1989, pp. 94-95).

Some of the ramifications of this quotation provide us with the possibility of a conclusion. The obvious question it raises is: to whom is *Life among the scientists* addressed? As a sociologist and educator I found it very interesting and informative; it told me many new things about scientists. Yet, the book itself reveals evidence that several members of the scientific community under study reject its accounts of their behaviour (pp. 118-21, 198-200, 213). I wonder if they would have found it more satisfactory if they had been shown reports written in the style of 'the psychology paper', following Day's guidelines? I imagine their book would be useful to a script-writer working on a 'soapie' based in a research laboratory. I can imagine Max Charlesworth presenting a convincing account of life in the lab. on *The science show...*

This approach to social science is not 'story telling', in the fictional sense. It is 'story telling' in the factual sense. Following Bronowski, 'science and other provisional modes of knowledge do not *instruct* our actions - they *inform* them'. Theories are both accounts and plans; they 'guide us to effects which will be confirmed, that is, which will turn out as the theory implies'. Their task is to 'imply the effects truly' (1977, pp. 96-97). We cannot predict what humans *will do* but, rather, what they *might do*. In

reporting the results of their investigations, researchers should allow their readers (or listeners/viewers) enough access to the behaviour of those being studied so that they can make informed judgements about such behaviour. If they are not satisfied with the researchers' conclusions, they can come to their own, based on their understanding of the facts reported.

We can conclude, as scientific reports often do, with the claim that there is evidence to suggest we need to undertake much more research on the reporting of research in distance education. Only then, may we know the full story ...

Part 2: Teaching and learning

Chapter 9

Action research in distance education: some observations and reflections

Herbert Altrichter

'Action research in distance education' may be understood in two different senses. Firstly, it can mean concentrating on how the concept and practice of action research is taught in off-campus courses. Secondly, the title can mean researching distance education by action research. To begin with, I want to talk about how these two meanings could be interesting for research in distance education. Then I want to discuss short excerpts of a recently finished evaluation of an off campus course with action research elements to highlight some dilemmas involved in teaching action research at a distance.

Teaching action research

Action research in distance education may focus on the question how the concept and practice of 'action research' is taught in courses of distance education. Let me first explain what I understand by action research. Action research is reflective and reflexive action. It is a concept of social learning and change which builds on people's capacity for reflective action and, at the same time, aims to support and develop this capacity. It does so by offering a broad strategy for this social learning and change which basically consists of the iterativity and interweaving of both reflection on one's own practice and action in it. Since knowledge and practice are understood as not merely individual but social, individual research and development has to be interwoven with collective research and development of the persons concerned by the situation under review. Or as Kemmis and McTaggart say:

> Action research is a form of *collective* self-reflective enquiry undertaken by the participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practices are carried out. Groups of participants can be teachers, students, principals, parents and other community members, - any group with a shared concern. The approach is only action research when it is *collaborative*, though it is important to realize that the action research of the group is achieved through the *critically examined action* of individual group members (Kemmis and McTaggart, 1988, p. 5).

Action research is essentially a concept of an action which makes a difference formulated in response and opposition to research, development and dissemination-models of curriculum innovation. The decisive difference lies in the way knowledge is seen and dealt with: important is not the processing of elements of the traditional written culture (in some version or another; eg. new findings of research) in order to be implemented as improved action, but the coming to terms with and developing of the material and ideological resources of culture as they are reflected in practitioners' action and knowledge; hence, the practitioners' knowledge is not primarily transmitted, but self-developed. That does not imply that traditional cultural knowledge or any knowledge external to the acting practitioners is fully jettisoned, however, it is deeply relativised. External ideas (eg. curricular proposals for Stenhouse 1975, p. 142) have a standing in action research processes if they are attempts to communicate specifications of educational ideas to practitioners in such a way that they can experiment with them, test them, and develop them according to the specifities of their situation. Similarly, other theoreticians of action research suggest to insert elements of the traditional lore (as research findings, philosophical concepts or, maybe, as stories) as 'alternative perspectives' with appropriate timing at specific points of the research process as further incentive to develop reflection and action (see Elliott, 1986).

The practice of action research as I have come to know it through my work in England originated from curriculum projects and inservice training for teachers. Nowadays, award bearing courses in tertiary institutions have become one of the strongholds of the 'action research movement' (see eg. Nias and Groundwater-Smith, 1988).

How is action research taught? Some people think that teaching action research is a contradiction in itself. What Schön writes about the 'teaching of reflective practice' might suffice as an example for similar things which have been stated with regard to action research:

> The student cannot be *taught* what he needs to know, but he can be coached: 'He has to see on his own behalf and in his own way the relations between means and methods employed and results achieved. Nobody else can see for him, and he can't see just by being "told", although the right kind of telling may guide his seeing and thus help him see what he needs to see' (Dewey 1974, 151) (Schön 1987, 17).

Using a quotation from Dewey the author seems to suggest an equation: 'teaching' = 'just telling' which would be a very specific interpretation based on a - at least theoretically - rather outdated understanding of teaching. He replaces the term 'teaching' (which he is obviously not fond of) by another term imported from the realm of sports and understood in a specific manner. However, we certainly will find outdated understandings of 'coaching' in the field of sports which amount to just telling. So what is to be gained by that kind of exercise apart from some temporary relief by having shoved the problem out of sight?

Thus, my first reaction is: the question 'Can we teach action research?' itself originates from a very 'didactical' conception of teaching which educational researchers should not readily accept. Certainly, in the sense of 'just telling' you cannot teach action research as you cannot teach being critical, either. But neither can you teach students how to live properly. In fact, everything which is really worth teaching (in the sense of the clear criterion that we become emotional about it and our eyes start glistening when we try to argue its importance) seems impossible of being taught.

I cannot see what we gain by continuous replacement of terms. Contrarily, I think that it is a quite good idea - as long as there are professional teachers involved in education - to dub their activities teaching and, at the same time, to work on the development of both the practice and the understanding of teaching. Therefore, if the idea is to initiate students to action research in institutions of post-secondary teaching we will do it via 'teaching'. However, that does not mean that teaching action research is a straightforward thing, but what teaching is straightforward? Teaching, I would argue, calls for a strategy in the face of an impossible task, calls for reflected action in the face of dilemmas:

> Teachers must be educated to develop their art, not to master it, for the claim to mastery merely signals the abandoning of aspiration. Teaching is not to be regarded as a static accomplishment like riding a bicycle or keeping a ledger; it is, like all arts of high ambition, a strategy in the face of an impossible task (Stenhouse, 1985, p. 124)

Usually, award bearing action research courses in tertiary education consists of the following elements (see Elliott, 1981):

- A group of part-time studying practitioners of some social field *research and develop some issue of their own practice* and prepare a case study which is accepted as an assignment.
- The research is supported by *field work seminars* which give the students the opportunity to discuss their on-going research, its substantive and methodological problems with peers and the tertiary teacher.
- The course is often complemented by some elements which introduce students into the *philosophical and methodological thinking* action researchers have developed over the years.

At the first view, the traditional mode of teaching action research has both some affinities with distance education and some features which might contradict distance education. The central learning process, the research into one's own practice does not take place on the premises of a specialized tertiary teaching institution but some 'distance' from it. However, this practice-oriented research process is embedded in a framework of intensive peer and teacher-student interaction which might be difficult to constitute in a distance education form.

Second order action research

Let me turn to the second meaning of action research in distance education: researching distance education by action research. As I have said action research consists basically of reflexively turning back on one's own activity (in a social context) in order to improve understanding of practice and inspire its development. As in all things reflexive, it falls back on you if you tell somebody to do it. Consequently, Elliott (1981, p. 259) requires external consultants and teachers of action research *themselves* to engage in a parallel research process concerning their own practice of facilitating or teaching. This *second order action research*, as he calls it, aims:

- to contribute to the development of a body of knowledge concerning the facilitation/teaching of action research;
- to hold teachers aware of their stance in the process of teaching with regard to the ethics of action research and their ideas of facing the dilemmas of teaching;
- and, in some kind of subversive irony it could also be interpreted as an attempt, to keep teachers engaged by focusing on their own activity, and stop them from constantly interfering with the students' thinking and doing.

Therefore, inspired by the concept of 'action research as social learning and change' and by the 'idea of second order action research' a social practice has evolved which is conceptually related and comparable to the idea of 'critical reflection in distance education' as formulated by Evans and Nation (1989a). They propose as a strategy to counteract the 'instructional industrialism' pervasive in institutions of distance education (as in other institutions of mass learning):

> critical reflectivity occurs where people reflexively (ie. also collaboratively; HA - see Evans and Nation, 1989a, p. 10) monitor their social actions by critiquing them against and through their understanding of the structural conditions of social life, and thus change their actions and thereby those structural conditions (Evans and Nation 1989a, p. 252).

The development of concrete forms of critical reflection on (or in) distance education could learn from the practices evolved in second order action research and vice versa.

Some dilemmas of action research in distance education

For the rest of the paper I want to concentrate on some experiences I gained through an evaluation of a newly developed course which meant to

realise action research orientations. Since I was not teaching in this course, but acting as an 'external evaluator' interviewing students and tutors what follows is *not* second order action research. Second order action research is done by the teachers themselves on their own practice involving the persons concerned by this practice. Certainly, I am hopeful that my evaluation report will inspire the course team to worthwhile ideas for the further development of the course but it will not be my responsibility to be a driving energy within the process of development.

The rationale of the course

The course entitled *Classroom Processes* I shall be talking about is a two-semester course and part of Bachelor of Education and Graduate Diploma in Educational Administration degree programs. It typically attracts an audience of part-time students, largely primary school teachers who want to upgrade their qualifications ('do their fourth year'). In its self-description in the study guide (part G, p. 109; see also part A, p. 9) the course claims that it 'identifies itself more closely (compared to the previous one; HA) with the action research tradition in the sense that it sees practitioner knowledge, rather than "expert" knowledge, as the key to improvement'. The tasks, however, differ from the conventional format of action research courses which tend to be organized around and culminate in a case study of the students' research and development work with regard to an issue of their own practice.

For the sake of a short description of the course let me claim that it has two *innovative features* which differ from the practice tutors, students and others expect as 'the same old thing' in distance education courses. Thus, 'innovative' does not denote novelty, but rather a propensity to conflict in some minor or major way with socialized expectations of all persons concerned. These two 'innovative features' are the open and complex tasks and the group work through the *Fives*. I shall consider these in turn.

Open and complex tasks

The main curricular ideas of the course are:

- by setting complex, non-technical and non-reproductive tasks (which basically consist of exploring concepts in the medium of practice and *vice versa*);
- by offering a resourceful, complex learning environment (which consists, firstly, of their own practice, and secondly, of a wealth of course materials);

- and students are meant to be supported in the development of located knowledge and a reflective practice.

The pedagogy of the course, in my interpretation, tries to develop distinctive features by redefining some aspects of traditional pedagogy of institutionalized schooling (and, thereby, distancing itself from routine expectations towards courses).

The redefinition of knowledge occurs through the incorporation of the practitioners' knowledge which is seen as related and located in specific sites as the focal point. Therefore, the systematized knowledge of tradition is not the focus.

As follows from above the 'content' of learning which is traditionally a selective authorized representation of the systematized knowledge of the culture for specific educational purposes is in part students' experience of their practice as represented by themselves with the cultural means they have acquired.

The classical approach of institutionalized schooling could be called deductive: the knowledge of the individual learner is seen as derived from a general, systematized knowledge which specialized teachers guard and transmit. The discipline is unambiguous in this approach which is necessarily teleological at a given point in time. An alternative inductive approach might have the following features: the centre of the attention is not the correct presentation of the knowledge of the discipline by the teacher but the development of the student's knowledge. The orientation is developmental instead of teleological. Thus, the activity situation is redefined. Teachers formulate questions (rather than providing answers for questions which have not be. i asked), initiate discussions and keep them open (instead of removing doubt and closing discussions), and provide a resourceful and supportive environment for the students' learning activities.

What has been so far presented as a nice distinction can neither be translated into a relationship of exclusion (eg. deductive teaching can never be successful in the sense that it prepares learners for thoughtful action if students are not - at least mentally - active, if they do not activate their own knowledge to see relationships between the offered knowledge and their own experience) nor one of eclectic harmonization. At least under the conditions of modern schooling - which aspire to both reproduction of traditions and transcending them for the sake of an unknown future, and to both enculturation and individual ownership of knowledge - I rather claim that they will assume the form of a dilemma which has to be faced in practice but cannot be solved on a conceptual level (eg. through philosophy, pre-action planning).

Important features of the course seem to reflect a tendency towards focussing on students' knowledge, on practice as content, and on students' activity, however, a relation of exclusion does not seem to b. underlying

the course's treatment of the two poles since the course chair elsewhere has formulated a *dilemma in course design 'experience vs instruction'* which appears to be basically identical to what has been dubbed here 'inductive vs deductive teaching' (see Walker 1985, p 5).

'Fives': strengthening student-student relationships as compensation for diminishing tutor-student relationships

The study guide explains the rationale for tutorial support in the course as follows: students are grouped in 'Fives' which 'form the basis of the tutorial support system' (ECT 401 study guide part A, 4). The grouping is done by the course team before the start of the course using the criterion of geographical closeness. Members of Fives are required to 'communicate regularly and read and comment on each others' work'. To complete the second assignment and some tasks within the first assignment, it is necessary to collect feedback from the fellow members of the Five. Participation in the Fives is a course requirement (ECT 401 study guide part A, 4).

Fives are not only a means of collegial consultation and support, but also the basic units for tutorial support provided by university tutors. Each month a tutor contacts in turn one member of the Fives to talk about problems, concerns, and ideas not only of this particular student but of the entire Five. Thus, contact via telephone at least every month is necessary within the Fives. Telephone icons in the study guide remind students to contact their colleagues in the Fives. Beyond that, all students are invited to contact members of the course team at any time for personal enquiries. The tutors are also marking the students' assignments.

Fives may be understood as an attempt to activate students' capacities for collegial consultation and support. At the same time they try to use this potential for a reduction of the work load of university tutors. The idea originally arose because of staffing cuts for tutorials and tutors (DI, 10).[1]

Experiences

Interviews with students and tutors provided me with a wealth of insights and experiences about what it means to be to be teaching and learning in an innovative course of that format. I shall not inform you about any specific results of the evaluation but rather concentrate on some issues which I see as dilemmas of teaching action research at a distance which might be of interest for other innovative courses. It is important to keep this focus on dilemmas in mind and not to take my reflections as an appreciation of the full course and its achievements.

Re-definition of the Fives as face-to-face groups

The first thing which struck my attention was that many students repeatedly said that 'the Fives did not work'. This was so partly because of organizational problems as some Fives became incomplete because of withdrawals and others had difficulties in keeping up the communication because of different time schedules and different working styles. Another reason might have been that the tutors mostly did not call their Fives monthly to talk about their work because of high workload. But even students who had a fairly sustained contact via telephone and mail in a way which seemed to fit to the expectations of the course developers experienced problems with the Fives. Some students developed a solution:

> most of us found that the Five was a hindrance at that time, until we really got together and realized that we could help each other...So I think the Five should get there (ie. to meet personally) really quick (I2, 12).

They redefined the Fives to make it more similar to a 'normal' - or maybe: 'real' - group which might include other forms of interaction but is based on face-to-face relationships. Initiating face-to-face contact might be interpreted as the students' 'invention' in order to react to the problems posed by the Fives (or the whole course) or, as enacting a deep seated 'natural interpretation' (in the sense of Feyerabend 1976, p. 108) of the concept 'group' as 'face-to-face group'. The latter alternative would also explain why Fives were mainly described as moral support, even if a lot of task-related work, both in relation to the working style on the tasks and to the content, took place (see eg. I12/13; I5/6): Some students interpret 'group' mainly in social terms whereas intellectual performance is seen as individual responsibility.

It was surprising for me to see how often this redefinition took place. Only three interviewees had no face-to-face contact with other Five-members. In one instance the person lived in a very remote area and used 'isolation' on more than one occasion to describe her situation as an off campus student (see I9, 16 and 18):

A: Fortunately, I had a good relationship with one other woman in the group. Because I knew she was home...she was home 2 days a week. Because I'm usually home Monday, Tuesday, I rang her, I knew she'll be home whereas the others were working and I don't like interrupting other people at tea time...so we got on well. I rang her when I was worried....She was so honest and we helped each other a lot that way — by reassuring that we were doing the right thing....

Q: Are you doing that in other courses as well that you try to find out if there is another student close to you?

A: I always do that. A lot of people don't because, I think, if they're working full-time they're too busy. You want to get on with your work. I can understand how they feel. But because I'm home a bit ... I like to ring people. You can tell straight away if they want you to... (mimics other voice:) 'oh, don't worry about it till three weeks before they are due in'. And I think: 'not one of these, I can't stand them, they're too confident for me'.... And as soon as I rang B I knew straight away she's like me, she does work very keenly, not all at once. And the girl in S. was the same the year before in another subject. There's usually been someone in each subject I've done. But they are not really close to me...couple of hours away (I9, p. 16).

She had developed quite a close telephone relationship to another student in her Five who was living 'a couple of hours away'. She had a closer relationship to this student than to other ones after finding out in her first contacts with the Five that their ways of working and their time schedules fitted together. Additionally, she had obviously developed (maybe because of her remote home) a competency of maintaining and profiting from telephone contact with few people selected after initial exploratory calls. She had used telephone communication not only in *Classroom Processes* but had similar relationships with fellow students in prior courses even when this form of contact was not suggested or required.

The second student without any face-to-face interaction with his Five had the impression that he had 'not enough' contact with the Five, although his description of activities fitted with that suggested by the study guide. The third student was actually part of a Five which had very close face-to-face interaction. She was supposed to meet the group but was prevented by illness. She did not seem to be too keen on closer face-to-face contact with the Five. She gave reasons like conflicting working hours and prior confusing experiences with contact to other students. The main reason seemed to be that she had developed an independent work style which fits well to most distance education courses. Too close interaction puts her into some dependency on other persons and conflicts with her independent time planning and work style. Interestingly, she had other persons to relate to and to talk to about the course: her family. And she implicitly seemed to accept the natural interpretation that the Fives must be groups with closer face-to-face interaction. She thought that she had 'very little contact' with the group although she was 'sending notes and photos and a couple of telephone calls' which did not seem far away from the expectations expressed in the study guide. However, she felt 'pressured' by this amount of contact. In all other cases the interviewees were in face-to-face contact with other course members.

During my work on these interviews I came across two papers which stimulated my attempts to interpret the redefinition of Fives as I had

observed it. The interviewed students sometimes reported feelings of 'isolation' (I9), 'loneliness' (I12/13), and being 'stuck down here' (I5/6). Distance education seems to be the solution for distanced and isolated students. On the other hand, it requires, as Evans (1989) argued, a certain basic amount of 'distance' and maybe 'isolation':

> Each distance education institution 'choreographs' students' existences through the establishment of routinized, bureaucratic procedures for their learning and for their relationship with the institution's staff. For most students this routinization comprises a symbolization of their absence from the place of the institution and a regulation of their 'daily-path' and 'private' time for study. The symbolization of absence occurs particularly through the use of *non-dialogic forms of communication*, eg., application forms, text course materials and written assignments all of which are distributed by post. The *regulation of their 'daily-path' and 'private'* time emerges through the study schedules, submission and examination dates and procedures, tutorial etc. attendance requirements, durations of readings, tapes, exercises etc. In a sense, distance education needs to ensure the maintenance of distance in the teaching-learning relationship....The distance(s) are translated into a set of time-space relations which institutions can accommodate for their own purposes. Such purposes include making the distance relations between remote students and the institution viable for connection and reducing the viability of connection for local students (Evans 1989, p. 11, my emphases).

If this is so, then pedagogical efforts to make distance relations viable may be (unwittingly) at the same time measures to keep students at distance. They are an attempt to continuously re-define and specify them as 'distant' in a contemporary sense in order to make them fit into the institution.

Fitzclarence and Kemmis (1989) attempted to make distance relations with students viable by particular course elements, like contributing to a 'Course Journal' (modelled after the image of 'academic journals') and face-to-face meetings of students at a central venue (modelled after the image of 'academic conferences'). An evaluation found that:

> almost all students said that they did not feel that they were members of a *Curriculum Theory* critical community - one said that the feeling was of a 'sense of loneliness on the course' - but several students did feel that they were more involved with each other than in other distance education courses at Deakin or elsewhere (Evans cited in Fitzclarence and Kemmis 1989, p.161).

> The appearance of the 'Journal' only four times a year also gives the interaction an attenuated, stylized quality which mitigates against the kind of 'suck it and see' interchange which helps people develop confidence and competence in critical discourse... it models these attenuated relationships and thus creates conditions for their reproduction. To the extent that it is successful it may even encourage to believe that distance relationship are as 'normal' and as 'real' - even

> as 'critical' as face-to-face relationships can be (Fitzclarence and Kemmis, 1989, p. 172).

Fitzclarence and Kemmis argue that 'attenuation, intangibility and transience of relationships' (p. 163) is the historical outcome of transformations of social relationships necessitated by participation in the 'extended market logic of contemporary Western society' (p. 169) and conclude: 'The need and demand for distance education is in a sense an expression of what some might see as a social pathology - the isolation of people from the sites and people in which and with whom they can become educated' (p. 171).

On one hand, Fives could be interpreted as an attempt to adapt to the problems of distance teaching. However, using Evans's argument we could alternatively try to see it as a way of keeping students at an appropriate distance or, using the Fitzclarence and Kemmis' argument as an attempt to transform relationships (and, generally, the concept of 'relationships') in a (post-)modern way to an 'attenuated, intangible and transient' caricature of 'real relationships'. The students' constant misunderstanding of the Fives as face-to-face relationships could then be interpreted (by the 'progressive') as rooted in obsolete understandings or (by the 'conservative') as resistance to 'modernization'.

A potential weakness of Fitzclarence and Kemmis's (1989, 172) argument is that it starts from the assumption of 'real' and 'normal' relationships which consequently makes the appreciation of historical development difficult: every difference implies a lost position and looks like a decline. For example, modern technology may have attenuated many existing relationships through opening up an increased number of possible relationships, however, in doing so it made tangible versions of relationships possible which before would have been by necessity intangible. The argument seems to imply some kind of 'natural state of unmediated relationships' which, as I suspect, would be historically hard to find.

This argument does not necessarily entail that there is no alternative to bold indulgence into everything which is washed to the surface of our material and ideological markets. A 'conservationist' attitude with regard to social relationships might be legitimate on the basis of plausible analyses of the effects of modern (eg. pedagogical) inventions on these relationships. For example, we could ask how the possibility of change on a local level pursued by the action of professionals (to name an orientation which is important to me) is affected by the specific transformations of relationships through increased use of phone, exchange of written texts via electronic mail, increased opportunity to work from one's home etc. How is collective action possible in an environment of electronically fortified castles?

The question remains: into what kind of relationships are we socializing students by specific attempts to find adequate forms of distance teaching?

This question came back in a transformed version during the exploration of the next piece of data.

Student uncertainty and negotiation

Another evident feature of my interviews was that many students (both those rather sympathetic to the course and those who rejected it for a variety of reasons) complained that they felt much uncertainty during the work, that guidelines were missing, that they did not know 'what they want me to do'. After an analysis of students' responses to specific tasks I felt that the main reasons for student uncertainty were not to be found in the unclear formulation of specific assignments but rather in a pervasive uncertainty resulting from the open-ended nature of many tasks which did not stipulate narrowly limited target behaviours.

Open-ended and complex tasks are, indeed, unclear in that they do not prescribe specific procedures for solution or specific outcomes. A person (naively and one-sidedly) subscribing to the 'open task' philosophy would see complaints about 'lacking clarity' as a false understanding of openness; they would argue that clarifying an 'open task' (eg. by giving a step-by-step procedure how to solve it) dislocates the task from its site-specific conditions and transforms it from a complex into a technical task. However, such persons cannot escape from limiting openness when it comes to giving awards. They may be open for unexpected solutions but they cannot be open for everything because that would place the course outside the rules of institutionalized learning.

On one hand, student uncertainty stems from the contradiction of the students' expectations socialized in long years of institutionalized schooling and the innovative expectations of the course. On the other hand, it precisely seems to reflect the basic dilemma of the teaching approach, the dilemma between 'experience and instruction', between 'being open for unforeseen complex action without accepting everything as solution'. However, many students seemed to have translated it in a - sometimes painful - personal dilemma of 'I'm being judged on the basis of criteria which are being concealed from me'.

A strategy of innovative courses to help students deal with dilemmas like these in a productive way is *negotiation*. By negotiation I mean an iterative, explicit or implicit adaptation of course and student expectations. Negotiation may be explicitly pursued via verbal interchange. It may be implicitly pursued through the signalling of expectations via course material and requirements and (on the students' part) through, for example, products of work and mentioning of problems which lead to development, clarification and adaptation of expectations. It is usually iterative because adaptation of expectations is a process in time particularly given that some expec-

tations are very deep-rooted and are not changed simply by being told.

In this understanding negotiation is continuous, since student and course expectations have to be brought into some sensible relationship, otherwise the examination results will be disastrous. Sometimes negotiation is, however, more explicit and easily visible while at other times it remains implicit (and therefore there is a bigger chance that 'false adaptations' take place) and is easily overlooked.

If negotiation is about the adaptation of course and student expectations it is an obvious strategy for innovative courses which have to expect that their unusual expectations differ from the students' ones. And actually, many innovative courses complement their curriculum with a negotiation strategy of some kind or another.

As noted previously, *Classroom Processes* aimed to cut back the costs for tutoring by introducing collegial consultation in the Fives. Since there was no tutor-initiated contact to students the assessment feedback was in effect the only relationship with the tutors. And it was the only content-related relationship to the university ('authority') after the course had started for students who hesitated to ring. This relationship was rather formal, impersonal, and inconsistent, as both tutors and students agreed: it was a 'distant relationship'.

As an attempt to explain my experiences, I developed the following statements:

- It is contradictory to introduce a curricular innovation and to attenuate tutor-student relationships at the same time because the counter-socialisational elements of the innovation are prone to be misunderstood.
- Tutor-student relationships cannot fully be replaced by student-student relationships under the conditions of modern institutionalized distance education: at the least during assessment tutors have to enter some relationship with students
- Particularly, in an innovative course tutor-student relationships cannot fully be replaced by student-student relationships: if the 'authority' introduces *new expectations* students will look to tutors for 'authorized interpretations' of these new expectations (even if they are in principle ready to share them after having them understood).

What are the conditions of negotiation in distance education? Here are a student's and a tutor's statement from my interviews:

> Like lectures, something comes up that you haven't thought of, so you make a note of it, you go up to the lecturer after the lecture and you just quickly ask something. That might take thirty seconds, whereas when

you're working on an assignment at sort of 11:30 at night, you don't feel as though you can ring up the lecturer and say, you know.... Because we work full-time, because we study at night that's when most of your thoughts and questions come to.... And by the time you've sort of gone through your work those little questions really don't seem..., you sort of say 'why bother' (I5/6, 5)

My experience of distance education is nine years now and the question is for me 'Is the notion of dialogue inherently a contradiction in distance education'. This arose out of an experience of endeavouring to develop some kind of critical social consciousness among students in courses I was teaching in a college before I came to Deakin, and the realization hitting me after - as I worked in a collaborative process to write and reflect on this with other people in distance education, and also as I looked at student's feedback and looked at how they were handling it, I started to wonder at the - it seemed to be quite a paradox - on the one hand I wanted them to develop this kind of social awareness about their professional, but on the other hand they were doing this in a relationship which was just a one-on-one relationship with me, and okay so I was requiring them to engage with the information and that, that they would find in their own professional worlds, but I thought, isn't this weird, what am I doing. Friends that I've got and probably yourself (referring to another tutor) who have been in a more technologically mediated set of distance education relationships - I've never done a teleconference say, anything like that, I thought I should try and explore the possibility within the technology that's available for developing, or getting over this contradiction where one wants the student to develop a social, critical awareness, and one is really saying, yeah but you do this strictly in a dyad, which is bizarre when I think about it. (IT 11)

A main obstacle to an effective practice of negotiation in distance education may be the *missing direct face-to-face contact* which might make the initial phase of building up some trust more difficult and lengthy. However, in *Classroom Processes* there was an attempt to build relationships in a technically mediated way. On the first clip of the video tape (which was part of the course material) the course chair and a tutor introduced themselves, explained their expectations and worries with regard to the course and shared some experiences of the course development. This was very much appreciated by most students, and not only this: some students seemed to build some kind of mental relationships with these two persons. Their names were by far the ones which were most often mentioned in the interviews and some students had built up quite elaborate views about the personality of these persons, which type of car they drove and so on. The question, however, is in my view: what follows after this introduction? This leads me to think that the main difficulty for negotiation in distance education might be to establish *conditions for iterativity* and for *locatedness* without much cost.

A central question for 'innovative courses' in distance education under current conditions seems to be: how is it possible to develop an iterative and located practice of negotiation which is not too costly but does not attenuate tutor-student relationships so much that students are left alone with the dilemmas of teaching?

Note

1 Self-collected data is quoted according to the following procedure: Student interviews are indicated by "I" plus the number of the interview plus the page of the respective passage in the interview transcripts. Tutor interviews are quoted by "IT" plus the page of the respective passage in the interview transcript. The transcripts of all interviews will be included into the evaluation file of ECT 401 (accessible via Deakin University library). Additionally, I use some diary data, largely memos of evaluation meetings and a few other memory protocols of meetings with students or tutors; this data is quoted as "DI" plus page number.

Chapter 10

A case study of research methods course development for Masters awards

Ted Nunan

Introduction

THIS CASE STUDY describes and analyses some of the issues surrounding the development and external delivery of the Master's awards in Education and Nursing at the South Australian College of Advanced Education. Both of these awards have received accreditation, with course assessment committees satisfying themselves that the administrative, teaching and resource arrangements relating to internal and external delivery were appropriate. In addition, one of the awards has recently undergone re-accreditation which approved structural change to the core areas and the addition of new studies in specialist areas.

The case study has two major sections which represent, in part, the history of my involvement with the development of external masters awards. The first phase focuses upon curriculum and planning issues and draws from relatively minor involvement in materials drafting and reviewing experience; the second phase is concerned exclusively with the events and decisions surrounding the writing and reviewing of course materials.

The first phase provides a macro level view of curriculum and planning issues - indeed, when this was first 'written up' there was only the germ of an idea that such a detailed follow-up at the micro level might be possible. What started as a report on activities came to look more like a case study which employs some of the techniques of qualitative research and, in common with the reported nature of such investigations, this study has shown evolution and progressive modification arising from the use of interviews as a technique to explore the development situation.

This case study is not a piece of carefully constructed research; instead, it is an attempt to tell the story of the development of course materials. The report about the first phase has been provided as a contextual background to the specific developments surrounding the writing and reviewing of a group of academic staff. The story moves from the formal to the personal as it shifts from the broad structural or methodological issues of the whole course to the detail and precision of dealing with key sections. The style of the case study changes also - from a reliance upon institutional data to a presentation of six conversations about personal experiences.

Margaret Grace, when writing about the hermeneutics of the interview in Chapter Three, notes three essential aspects: 'the contextuality of meaning; the penetration of facades to reveal hidden meanings; and the role of both the one who tells and the one who hears in the production of meanings'. This case study attempts to provide contextual description and writes about who tells and who hears - however, with regard to the matter of penetrative interpretation, the author has chosen not to re-interpret the objective realities described in the conversations. Instead, the exploration of meanings which follows the conversations is owned by the author; there can be no suggestion that conversations reveal 'false consciousness' or require demystification. The particular analysis of meaning which draws from, and is informed by, the conversations is a subjective view which simply purports to tell a story.

The first phase - a macro description

Before considering issues of course development it is important to outline the different contexts surrounding each award. The Master of Education (MEd) award was first taught on-campus with the intention that pilot off-campus materials be used to smooth the introduction of full external delivery in the following year; the Master of Nursing (MN) had a first intake of both on-campus and off-campus students. The MEd pilot course materials were evaluated by an external consultant; for the MN the developmental process included the establishment of course teams and formal review processes with further production support by editorial staff.

There is a common unit, *Issues and Methods of Research*, which forms part of both awards. Later in the case study we will be concerned with a micro description of developmental issues for this unit which provides a contrast with the macro assumptions embedded in both awards. These were brought to a focus in *Issues and Methods of Research* and the impact, along with that generated by the curriculum content, had a powerful influence upon the decisions made by the development group of staff from the MEd and MN awards.

Framing the issues

Bynner has identified two major issues in relation to teaching external Masters awards, noting that it is the view of some universities that:

> ...the whole distance education enterprise in this area is considered to be questionable.... The elements of Masters teaching requiring close supervision of advanced project work or the presentation of advanced papers to others in the seminar setting are thought by some to rule it out

> from teaching systems relying heavily on written and audio-visual media. There is also the belief that limited access to postgraduate library resources will prevent students from performing at the appropriate post-graduate level. (1986, p. 23)

Not unexpectedly, the debate concerning the feasibility of distance education at this level appears to be based around comparisons with the physical characteristics of face-to-face teaching. Close supervision is often taken to mean frequent contact; seminar settings, in Bynner's terms, generally involve group meetings of students engaged in the presentation and defence of their papers; access to library resources normally implies the opportunity for students to carry out search activities which result in new and contemporary interpretations of seminar content and research areas. These issues were aired during the re-accreditation of the MEd. One main recommendation in the *Report of the Course Assessment Committee - MEd* (1989) was that the College closely monitor 'the extent to which opportunities for student interaction are available and maximised, and (consider) comparisons of the study experiences and outcomes of internal and external students' (p.4). The assessment committee was re-assured that 'a number of methods can and will be invoked to replicate, to the greatest extent possible, the scope for interaction between external students, in order to ensure that the study experiences of external students are comparable to those of internal students' (p.4).

There was, of course, much weight given to these physical aspects as necessary pre-requisites to successful Masters level study by staff teaching the awards. However, there was more to the debate than such physical considerations; even in cases where staff agreed that such considerations may be overcome, there were underlying philosophical issues surrounding the production and validation of knowledge which required resolution.

Masters level study requires research and research processes are seen to generate new knowledge. The validation of 'cutting edge' knowledge is through critical appraisal - indeed the growth of knowledge, and its increase in 'truth-content', is seen to depend upon unfettered criticism. This view, in its undiluted form, is concerned with the generation and validation of scientific knowledge and forms a central thesis in the writing of Karl Popper (see Lakatos and Musgrave, 1970). While this is not the place to enter into a full epistemological debate, it is important to note that these views lend influence to the central role of critical dialogue in knowledge production. Production and validation of knowledge is achieved primarily by the research component of Masters study - indeed, this level of study requires research whereas other levels may not. For some staff the teaching processes should also mirror, as much as is possible, processes which are thought to contribute to becoming a successful researcher engaged in producing new knowledge.

Traditionally, this central ideological position of research has meant that the enterprise of masters level studies values both approaches which

allow students to set the agenda for knowledge production, and teaching which is process oriented - that is validation and legitimation of knowledge is for a wider audience than a 'supervisor' or teacher. The role of staff is to induct students into attitudes and values which foster processes of knowledge production.

Consequently, the negotiation of learning becomes a mechanism whereby students can set an agenda - a form of this involves the choice of 'options' within an area. Further, because of the central role of critical discussion the seminar is seen as a first-level appraisal of knowledge claims prior to the eventual marking of a thesis or dissertation by external examiners.

Also, at the point of developing the common unit which prepared students to both understand and do research, this central ideological position was brought sharply into focus in terms of the value of such knowledge to particular areas of study. Thus, while the requirement of research and research processes within the degree was seen to indicate a particular overarching style (ie. the difference in approach between a course work Masters degree and a degree which has a significant research orientation) it was also to be seen as a central area at the level of inducting students into research activities and traditions. Consequently, the issues of the nature of research activity in general, and whether there were particular types and styles of research activity unique or particularly suited to awards A or B were questions which were returned to time and time again during the subsequent development.

Defining and resolving the issues - the experience of the MEd

Even at this early stage issues similar to those outlined by Bynner were expressed when the advisory committee noted:

> ...concern with the difficulties faced by external students in obtaining access to the resources needed for the independent investigation, and in participating in the detailed discussion which ought to take place between a student and the supervisor of his or her project.(*Report of the Academic Advisory Panel*, 1985)

The course assessment committee of the full accreditation proposal took up a further issue when it noted:

> Given the emphasis on self directed learning and the implied potential for students to pursue their studies in isolation, the Committee sought to clarify the opportunities that would be given to enable students to interact with (and be challenged by) staff and their peers. The issue was considered to be particularly important in respect of female students and external students.(*Course Assessment Committee Report*, 1986)

While the above matters were formally expressed within the course assessment report, staff teaching the award saw these issues largely in terms of the values that they held regarding the 'research' aspect of masters level study. Consequently, the key questions as defined by staff were:

- How can we ensure that students are able to set learning agendas when we are engaged in pre-preparation of external study materials which, by their very existence, tend to remove such decision making from students? Further, how can this pre-planned study be formulated in ways which encourage students to 'research' an area of knowledge thereby engaging in processes which will contribute to the individual investigation and thesis requirements?
- How can we provide interaction and, in particular, ensure critical appraisal of knowledge that has been produced by students; and, how can this be achieved with the minimum of turn-around-time so that the interaction simulates 'conversation'?
- How can we ensure that students have access to sufficient and varied resources so that the level of their response to learning situations warrants critical appraisal?

The responses to these issues at the level of educational design and pedagogy were, to some extent, coloured by the fact that staff had to contend with teaching the award simultaneously to internal students. One response to these questions was to evaluate and review the pilot course materials. The review by an external consultant and two other staff of the College provided a re-definition of these issues. The reviewers were concerned with:

- The success of 'individualising', or enabling students to set their own learning agendas, would depend upon reducing interactive turn around time for negotiating such agendas.
- The role of teleconferencing required clarification and successful use of the techniques would depend on formulating methodological expectations which might differ from those of face-to-face seminars.
- The means by which students could reasonably access the resources potentially available to meet their 'learning agendas', should be identified and the support to students by clarifying expectations and experiences of external mode study should be included within the course materials.

There was little comment regarding the role of research activity as the review involved only the pilot materials for the first year of the course which did not include *Issues and Methods of Research*. The staff evaluated teleconferencing in relation to their perception of the requirements of

particular course units. At a subsequent review meeting staff discussed issues such as:

- How can you exploit telephone technology to give a sense of a seminar experience?
- How can we anticipate differences between the nature of teleconferences for staff-led papers compared with student-led papers?
- Whose questions should be the focus of a teleconference? Is it appropriate to challenge the prescribed agenda of the teleconference leader?
- Should the same students (and staff) remain in one teleconference group throughout the year?

Clearly, there was much genuine concern for the issues raised by the course assessment committee although, behind the issues defined by both the committee and staff was a particular conception of knowledge production and validation suited to traditional face-to-face higher degree teaching. The strength of this tradition with its emphasis of individual negotiation and supervision proved to be a potent factor driving the development of the award. This was evidenced by the following:

- As early as May 1987 the Project Management Group for the award looked at the matter of the intensive staff input needed to sustain 'individualisation'. Despite the considerable workload, staff provided extensive personal supervision for students as part of the teaching of the first unit of the award. (Just over one year later the reports to this group indicated that this core unit was experiencing difficulties in staffing the individual needs of student contracts, and with re-accreditation there has been considerable change to the methodology of the core unit arising from workload considerations and the increasing numbers of students undertaking the award. Further, the course assessment report of the MEd for reaccreditation continued this concern for staff workloads generated by the teaching methodology of individualisation noting that workloads 'might well expand to the point where involvement in research and consultancy activities is not practicable').
- Excellent materials on negotiating contracts and educational journals were produced and revised so that the commitment to student agenda-setting could be organised for external students. These were followed by materials on seminars and teleseminars to provide guidance for students in meeting their responsibilities in participating in groups.
- Much of the initial discussion and review focussed on internal delivery (this was to be expected) thereby unconsciously reinforcing the assumptions associated with face-to-face

teaching of groups. Yet by 1989 in one area of the area of the MEd, 26% and for 1990 only 10% of applicants were internal.

It is important to recognise the staff commitment to delivering high quality and innovative educational experiences to external students and that this reflected back on the on-campus courses.

Defining and resolving the issues - the experience of the MN

The planning processes for the MN built upon the experiences of the MEd, consequently, when the first meeting of the Project Management Group for this award discussed the matter of external mode it was decided that achieving the 'leanest possible structure' for the award would benefit the external delivery. The commitment to have a first intake of both internal and external students was so strong that the course co-ordinator wrote in a memorandum that 'it would be in the interests of the profession to delay the commencement date, if necessary, to ensure that the materials developed for the external mode could be utilized in the internal mode.' Hence, from the outset, there was a climate which considered distance education as central to the success of the award.

Clearly, the situation for the MN was significantly different from that of the MEd. First, staff had the opportunity to define the issues from a position which started with assumptions about distance education; second, the award had, in its planning, less emphasis upon process approaches because of both the content of the award and the experiences of delivery of the MEd; third, the assumptions behind research-processes as central to study at Masters level were balanced by a need to provide a 'taught' body of knowledge.

Consequently, the three issues which involved considerable debate for staff teaching the MN were of less concern to staff teaching the MEd and, not surprisingly, there was less 'contestation' evident in the resolution of these issues. Students were given opportunities to work within flexible assignment arrangements or provided with a choice of 'areas of study' within units as an alternative strategy to negotiation. The notion of interaction with students was less focussed on teleconferencing and more upon a range of requirements which ensured dialogue. Indeed, in the second unit of study, as part of the student materials, staff produced a *Strategies* booklet (Barclay, 1989) which sets out a range of communication strategies to be employed by external students. Students were required to keep a journal and to use a 'reference group' established by the student to provide advice, support and criticism about project work. Students were required to conduct several interviews and the preparation of an interview schedule which involves descriptive, structural, and contrast questions was, in itself,

a special form of 'intended dialogue'. In addition, teleconferences were planned to support the students work.

Another effect of the focus on distance education for the MN was that the resolution of design and teaching issues was seen to be best carried out at the materials preparation stage. The mechanism here was to establish unit development groups and conduct formal academic reviews in which there was considerable weighting given to exploring methodological concerns surrounding the transformation of content for external delivery. Thus concerns of resources and interaction were grounded in particular instances for specific content and the methodological resolution of the situation often came from group discussion at the review stage. Importantly, editors were involved in working upon these reviewed draft materials. This affected the group dynamics of the contributors by ensuring that the responsibility for particular materials was not diffused throughout the group. Also the editors acted as the 'first students' of the materials and provided useful critical readings of the teaching discourses.

Reflections on the first phase

The preceding section has provided an overview of the features surrounding the development of two Masters awards. It is clear that the decisions about strategy, design and teaching approaches cannot be understood without extensive and further analysis of the context within which the awards were being developed. Judith Riley's (1984) work reinforced what had been suspected from the beginning - those involved in designing course materials and teaching approaches had a very different agenda of concerns from those reported in normative and interventionist instructional design theories. Indeed, if we are to understand the events surrounding the development we will need to explore matters such as the human beliefs; the individual characteristics of writers; the group dynamics and interpersonal relationships of those engaged in the development; and the impact of the type of content upon the decisions made before we can speculate upon the way events unfolded.

Nevertheless, it was possible to identify three features. First, no staff, so far, had found the need to refer or appeal to a 'theory' of design in arriving at curriculum or methodological decisions. Second, most staff had an implicit understanding that design decisions are inextricably bound up with the notion of management - there was concern in both groups about the self-determination available to students *vs* the pre-determined management of student learning by staff. These staff saw their role with students as problematic and considered the relationship between design and management at the level of its effects upon the individual student rather than the group. Staff of the MN were also well aware of the inextricable binding of design with management but often considered the situation from the

dual perspective of 'the learning should be controlled because the profession values this knowledge' and 'the learning should be open because professionals are self-determining.' Consequently, to satisfy these two requirements, this group was able to move between managed and self determining approaches with little difficulty - whatever the developmental decision, the justification of content and methodology could be accommodated by appealing to a mix of these value positions. This often meant that certain approaches were not problematic in terms of the commonly shared values held by staff - however, where the development group involved staff who had differing beliefs about fundamental positions the resolution of issues became a complex matter. A third point is that understanding distance education issues always involved the curriculum content and the learning context.

From macro to micro description

We shall now move to a more detailed investigation of the development of course materials arising from the frameworks of the awards. The next section explores the ways in which staff from the MEd and MN jointly developed materials for a common course, *Issues and Method of Research.* Since the research area of both awards is aimed at introducing students to research and presenting skills which enable students to undertake research activity, it was thought that joint development of course materials would benefit both students, through the provision of a greater range of research examples/activities from both areas, and staff, through a wider sharing of the work involved in developing and writing the course materials.

Developing *Issues and Methods of Research*

Issues and Methods of Research is directed at ensuring a level of research competence and familiarity sufficient to cater for student's needs both in relation to the preparation of a thesis or project within the award and for further research. The literature indicates that the attainment of research skills and the provision of 'good' supervision are seen to be vital to the successful completion (Powles, 1989) of such awards and that there are problems in teaching the research component at a distance (Bynner, 1986). Consequently, the development of innovative course materials was seen as a challenge to meet the needs of different students as well as to resolve issues in distance teaching and learning for this area.

The planning group established for *Issues and Methods of Research*, a semester unit of some 360 student-hours, involved a core of six staff; however, over three years, there were some thirteen staff formally involved. The group met regularly to plan the structure of the unit and with four staff

eventually writing the draft sections. There were two formal reviews of these drafts involving the whole group after which the writing and amendments became the responsibility of two staff. It is important to note that this writing and review was carried out in a very conscientious manner.

As an academic working in course and materials design and evaluation, I am a member of the planning group for both awards and have been involved with the various debates about the purposes of those sections which deal with the intended research activity of students. My role in the development process was to work with academics to assist in matters relating to the design and writing of the course materials for external delivery; further, as a member of the group I attended review meetings and provided advice on distance teaching.

My starting point for this part of the investigation stems from a general interest in theories of instructional design, educational development and writing processes. While there is an extensive literature on educational development and instructional design in distance education (e.g. Parer, 1989), the majority of the works describe and evaluate practice from theoretical frameworks which have been imported into this field. There are relatively few writers, other than Riley (1984), Jenkins, (1989) and Lockwood (1989), who work from the reported practice and experiences of those engaged in writing distance education materials. In particular, I am interested in the ways in which practitioners deal with the interplay between curriculum and pedagogy because it influences decisions about the best way to write materials that teach external students. For some theorists, distance education pedagogogy can be divorced from the content to which it is applied - that is, there are generalisable principles of instructional design which should dictate certain matters relating to writing course materials. Indeed, the legitimacy of a development process, for those who hold such views, is a function of the extent to which instructional design theories guide pedagogical decisions. Others claim that the content and methodology are so intertwined that a general instructional theory is an impossibility. As I have written elsewhere (1989) it is my belief that expectations derived from instructional design theories play a relatively small part, if any at all, in practices of designing and writing course materials for external students.

This part of the investigation was unplanned. Indeed, it was not until reading and article entitled 'The Epistemological Unity of Educational Research' by Walkers and Evers (1987) that I stumbled upon a framework which I could draw from in attempting to reflect upon the actions of the group. While reading this article I was struck by a key sentence:

> Educational research, in being concerned with the conduct of educational enquiry and the development and evaluation of its methods and findings, embodies a commitment to epistemological assumptions (p. 28).

This, of course, is not surprising. What was useful was the notion that the commitments might be organised according to three basic positions. They write:

> First, it can be asserted that there are epistemologically different paradigms, which are incommensurable in that neither educational research nor any other form of inquiry can provide a rational method of judging between them. Moreover, they are mutually incompatible, competitive ways of researching the same territory. Let us call this the 'oppositional diversity thesis'. Second, we could decide that there are epistemologically distinct paradigms, but that though incommensurable they are complementary, not competitive: equally appropriate ways of approaching different, overlapping, or perhaps even the same research problems. Let us call this the 'complementary diversity thesis'. The first and second views agree that there is a fundamental epistemological diversity in educational research. The third alternative, the unity thesis, denies this. It disagrees with the view that different research methods can be grouped under incommensurable paradigms, and asserts that the very idea of such paradigms is mistaken, even incoherent (p. 28).

The usefulness of the Walkers and Evers's article was that it firstly talked of commitments (values and assumptions) and secondly it provided a map of possible commitments of researchers. It could well be that, whatever might be the private beliefs of authors about the worth of particular research approaches, working productively to write and review as a group meant that openly holding the 'oppositional diversity thesis' was not possible. Labelling a research approach a paradigm would provide an intellectual imprimatur to outline significant positions which would not necessarily belong to each author. The 'complementary diversity thesis' could provide an avenue for acknowledging the research activities of all writers - however, the inclusion of the critical approach within the paradigm framework would hold special consequences as, to some, critical theory could be seen as an attempt at a higher-order synthesis of positivist and interpretivist approaches. Hence, inbuilt into the acceptance of structuring content around a paradigm approach there might be an unresolvable value tension between the critical paradigm and the positivist and interpretivist paradigms. The third position which rejects the notion of paradigms would probably not provide an attractive alternative; this approach was both conceptually difficult and seemed to lack a framework which would assist teaching and methodological decisions.

Hence, there was the possibility that these alternatives might provide a way of labelling the agendas which seemed to underpin the dynamics of the group. They may help to identify meanings behind critical comments made by group members and interpret the outcomes of the development process. These assumptions seemed reasonable as the group made rapid progress upon writing and teaching decisions once they adopted a paradigm structure - somehow, the interplay between the content of this unit on *Issues and Methods of Research* and the teaching approach became clearer to the group after adopting a paradigm design.

A feature of the group dynamics and the actions of members was the initial contestation about beliefs about both the nature of research activity and how best to teach the novice researcher. Beliefs in each area were strongly held and were exposed to others because of two factors: staff had elected to employ group processes in developing materials; there was a heightened sense of accountability associated with the development as review processes ensured that each author was accountable to the group. Further, because the results of the development were potentially available to other academics and students not involved with the award - through the published course materials - there was a wider *de facto* accountability to the 'community of scholars' involved in teaching and researching. The course materials contained within them a particular resolution of epistemological and methodological issues attributable to the group - their legitimacy as a contributor to knowledge about research and teaching how to become a researcher would be open to sustained criticism from others with differing views.

This, of course, contrasts with the situation where development is carried out by an individual without reference to others (or with essentially private review by individual colleagues) and the delivery of the content and methodology is in a face-to-face classroom situation. When a teacher closes a classroom door there are few that have the power to intervene in the delivery or have the opportunity to evaluate critically methodological or content issues.

I will try to establish, through conversations with key participants, the effects of the above factors upon the development processes. A descriptive section will outline the arena - the people and key events and, as far as is possible, avoid interpretation of these events. This is followed by a section which attempts to re-construct the situation from the viewpoints of individual participants - I have selected parts of my conversations with participants to describe these realities. A final section will contain an interpretation of the events, drawing upon my experiences as a participant in the group and my interpretation of the reported realities.

The arena - a description of the people and events

Initially, the planning group to oversee the design and development of course materials for the research area was concerned only with the Masters in Education award; however, within three months of starting, a new group was established to incorporate staff working in the area of Nursing so that a re-designed unit could service both awards.

The first formal statement of the course content indicates that it was to focus around three sections - an introduction of some four weeks, a section on research skills of eleven weeks, and then work on a third area on re-

search issues for eleven weeks. Briefly, the introductory sessions were to analyse a number of key papers to assist in clarification of the conception of research, to establish the range of types of research projects, and to highlight the skills required for planning and funding a research project. The second section on research skills was to cover such things as research methodologies and examine their characteristics, advantages and disadvantages, validity, reliability, utility, and data collection and analysis. In the third section on research issues there were to be two specific research case studies and guest researcher presentations with appropriate readings that would be used to examine critically a number of assumptions concerning the epistemology, ideology, ethics, and politics of research methodologies.

About two months later the design was reviewed by the group and the implications of developing joint teaching materials for external students in both education and nursing were explored. At this stage the minutes of the development meeting noted there was 'consensus that every attempt should be made to develop a generic Study Guide (materials) and that the structure of the unit could be developed further to improve its conceptual integrity and overcome a possible dislocation of the research skills/issues sections from their research paradigm localities'. At the next meeting it was proposed that a review of the research methods used in various research approaches or paradigms would satisfy the aims of the course unit and, as a discussion point, a structure which used 'paradigms of social enquiry' involving normative, interpretive, social constructionist and critical approaches was suggested. Considerable discussion followed on the appropriate content and structure. Eventually, the three way taxonomy associated with Popkewitz was used, with different staff providing materials for empirical-analytic, interpretive (symbolic, qualitative, hermeneutical) and critical approaches.

The move to interpret the structure of the unit in terms of research paradigms was contested. The group, however, decided to continue with the paradigm structure - their approach might be linked to the 'complementary diversity thesis'. At this stage the minutes note that there was 'general agreement' that the structure should remain based around paradigms.

The draft materials were reviewed by the group; however, as they were incomplete in a number of key areas, this second review was partly formative rather than summative in nature. At the point of writing, materials for the nursing area are under further independent review with evaluators indicating that the epistemological commitments embedded in the materials require consideration in terms of the purposes of the Nursing award and the research that students in this area may undertake. In the education area, there is strong interest in the materials as, in the future, they will be used by a range of specialist areas and there is some concern by staff that the materials may not universally meet their specialist needs. In short, the process of generating external materials has revealed, during drafting

and review, a range of commitments which influence opinions about the acceptability of the materials.

Writing and reviewing materials - views from participants

This section looks at reports of conversations that I organised with six staff who had a sustained interest or wrote materials for the unit on *Issues and Methods of Research*. As far as is possible I have tried to report views rather than place interpretations upon the substance of our conversations.

Before meeting with staff and recording the conversation each participant was sent a draft of the description of the events covered in the previous section. In addition, each participant was given the following four questions prior to the meeting - these were used to focus the conversation:

- Working with a group may have placed constraints upon you as an individual. Would you like to comment on this?
- Working to produce external course materials that are published and are publicly available may have placed constraints upon either the group or you as an individual. Would you like to comment on this?
- As you are aware there are a range of opinions about teaching, about research and fostering conditions for the successful carrying out of research by students. Course materials are therefore likely to be appraised in terms of these differing view points. Would you like to comment on any opinions about the course materials that you may have received?
- Would you like to comment on any aspect of the development process or speculate upon the outcomes of the development work?

I chose not to question participants directly about their perceived commitments of others in terms of the Walkers and Evers basic positions. This was not an attempt at penetrative interpretation through disguising the purposes of questions - instead, the questions were aimed at each participants experiences in the developmental process so that the resulting conversation might allow the participants to set their own intellectual framework over the events. Of course, I had hoped that participants would analyse their experiences in ways which could be linked to the organising framework provided by Walkers and Evers.

Before presenting these conversations I must, as a participant within the group and the writer of this case study, make comment upon the involvement of staff in this project. When approached to participate in this project

each staff member readily agreed and had a genuine interest in the success of this case study. Staff, as researchers, were well aware of the difficulties that they and I might face in providing this information. For example, as the conversations were conducted some time after the formal group involvement in reviewing materials, opinions expressed in these conversations may not have been expressed within the group - and, when staff work on a professional level within the group over a period of time there is the matter of courtesy to colleagues in raising such matters in a group situation before stating opinions privately to an interviewer. Such was the level of professional conduct within the group that it would seem unnecessary to recount the well worn adage that professional disagreements were never viewed as personal attacks. Indeed, some participants expressed the view that the collective enterprise of the group 'lived on' despite the fact that the group reviews had finished and the task of finalising the writing/ editing was with two of the group and an editor. This expression of concern for colleagues must be respected - yet, balanced against this is the value placed upon 'openness' as an essential academic value which lies behind research activity. Consequently, each of the participants was faced with the task of presenting their individually held opinions (perhaps formed with the benefit of hindsight) without the opportunity of prior group interaction - in a sense, they were 'flying blind' as each participant had no knowledge of the views that others may have reached now that the group stage of the development had substantially concluded. I should also record that this situation can only occur where staff are confident in their professional standing and relations with others and a spirit of 'group trust' can assure each participant that the developmental activity, in itself, was truly an academic undertaking. As one participant said, 'part of the group process is just how much trust exists between members of the group'.

An edited version of each the conversations[1] follows; each group member has reviewed the report of their conversation.

Conversation A

For this participant the group dynamics changed during the development process. There were 'so many different ideas about what the goals were to be within that group, that I think ... for the ... time that I was a part of it there were great difficulties.' Without a 'totally shared goal' there developed a 'negotiated arrangement' - 'we had actually settled down into the two relatively polarised positions being able to work together'. This balance changed - in fact the development 'might have worked better if that balance was maintained but it was always going to be problematic because of the contrast in goals that people had in the materials'.

The 'polarisation of power position' could be described by considering that one of the poles 'gave us a particular view of how the materials should be

taught and how they should be presented (which) differed from (those) who's job is to think about research, rather than to do it'.

The polarisation became more explicit - 'perhaps we made a fundamental error, and that is, because we can't come to some consensus of what is the agenda, and how we should be operating, we enable people to speak from their own platform; and then if you give them that right, then you give them the right to try and convert people to the particular view that they hold of the world.' The meetings, to some extent, provided a forum for 'people who have never had an opportunity perhaps to have their say, to develop their own thinking and talk it through so that it is no longer a mission.'

When talking about the structure of the course materials the group member indicated that 'that's where I have a problem, that those paradigms were not seen as valuable, each of them in their own area for what they can contribute - we had a hierarchy'.

This contestation meant that there was a need to 'keep coming back to principles. I think that there are certain sorts of principles that underlie any research endeavour and it was hard to even begin to see those principles when you look through the package.' Perhaps a concentration on principles would have assisted the analysis of teaching processes - 'if you are going to teach people how to be researchers, it's easier to teach them certain sorts of fundamental principles in empirical method and then you move them on; I mean principles like reliability and validity are essential in whatever paradigm you are operating in, and they are easier taught in the more concrete, the more confined, the more constrained and more limited empirical one'.

The situation which developed within the group might well be seen to be inimical to the aim of producing external materials - 'if the job people want colleagues to do is outside their strength or capacities, or outside the agenda for the course, then you have chosen the wrong people to do the job. This is not necessarily a comment on that individual; my expectation would be that when you have got something complicated that needs to meet a number of agendas, you have to decide if you are going to try and meet the agendas, which is what I think happened in this unit, or you acknowledge that you cannot meet all those agendas and you bail out far more quickly than happened here'. Perhaps it would have been better to use a different approach as 'if we want someone to develop a unit on ...research, we ask them to do it, and we trust that they do it and we know what we are going to get, and we trust that the students will approach that with some discrimination and with an opportunity to balance that unit against other ... methods'.

Indeed there are 'dangers of group processes' and the need for such processes could be questioned - 'you don't ask a colleague to develop materials

as an individual unless you respect their authority in the area; it may be they come to the area from a different perspective from the one that you might choose, but presumably if they're an academic who is invited to prepare a unit, they have enough expertise in their own interpretation of how that unit should be developed for the team to have trusted them to have done it in the first place'.

Two features of the development had a significant impact upon the events. First, 'many people are not working in the real world; they are working in the level of ideas rather than ideas tempered by (what) you are actually trying to in the real world'; second 'I hold passionate belief in the value of research, but I don't hold a passionate belief in the value of one method in research. But there are people in the college who hold a passionate commitment about particular sorts of methods that are superior to other methods in research'.

Conversation B

This participant noted that 'the first time the group was set up the course was basically an internal course, so the discussions were about how to teach better, and how to do research better'.

In forming the group, 'it was more a question of people who have been involved in research who volunteered to come together to set up this course, because of their interest and previous experience. There was a fairly strong belief that many of the courses that people have been involved in themselves as students weren't satisfying'. The initial design employed 'almost a case study approach, so as to not have the theory and practice quite separate; to engage people from within the College firstly, then from elsewhere, if necessary, who actually have been, or are doing, research'. However 'I think that that particular version of the course died a bit, or went into hibernation and what became more definite was some sort of external course, one which has to be planned so much further ahead. It is much more restrictive; also I think that this provided some urgency and priorities'. So, the course changed from being 'thought of almost as a succession of seminars with some pre-reading, then people discussing and giving accounts, and being available for discussion and so on'. Also at this stage the 'strict paradigm version hadn't really raised it's ugly head, but as the increasing pressure to actually get something down on paper and actually get it organised was felt, the people that were better organised became much more prominent in determining the way that things would happen - they were the people that were doing the work. There was no opposition to that'.

In pragmatic terms 'it was clear that the staff involved were not wanting to teach the whole thing themselves. There was going to be some kind of

specialisation of time and areas within the course. So having a framework which did quite clearly allow people with particular priorities to get along with theirs and then perhaps later look at the others, was seen as useful'. The paradigm structure was introduced; 'it's a very neat one, and there has been widespread support, in a missionary sort of way, in Australia for this particular three paradigm approach. It provided a structure which many of us, I suspect, didn't look at very hard at this stage'.

However, 'this particular approach is heavily biased; so it sets up three versions of how one knows, how one thinks, how one does research and so on, then rubbishes two of them, and comes up with the 'critical paradigm' as the one and only one; that was becoming more apparent as some of the material involved surfaced, and what looked like a fairly convenient way of legitimating a division of labour looked worse and worse'. The attention of the group became focussed upon paradigm issues partly because of practical concerns; 'considering students would be secondary to our concern about how on earth to divide up the huge amount of content, how to simplify it, categorise it, and break it down to some manageable level. Staff effort, was limited and was going to continue to be limited; also, I suspect in a way, not everybody knew everything, so we had to somehow simplify that, the very wide reality'.

So, the matter of resolving the status of various paradigms was to remain an issue for the group - indeed, 'my concern is still there, because I think there has been a watering down of some of things I was objecting to, but they are still there'. This concerns me as 'set piece battles about the most appropriate way to understand and to research and to interpret and so on, seem somewhat historical and "dinosaurish" - I get the impression that those sorts of arguments are in the past'.

Conversation C

According to this participant the major challenge of this work was that we 'were all working with a very interesting idea; how can you find a common approach to research through three paradigms that would be equally right for very diverse groups of people'.

In talking about the group situation the participant 'decided that I wouldn't join any one of those groupings because I didn't feel that passionate about any one of them to want to be seen to be on a side; indeed, I was happy, in a sense, to sit back and watch the others torture themselves with their own thinking; it was highly competent stuff.' This stance results from being 'eclectic as a researcher, and so I make highly practical decisions as to which ideology or research paradigm suits a particular research focus....You see the eclectic and the pragmatic in me was taking the view that all three (paradigms) have their place, possibly in the same project - I

would be thinking as an eclectic and as a practical researcher that maybe an empirical approach is relevant to that section, maybe an interpretive approach is relevant to that section, and the critical approach has a kind of over arching value in being able to stand back from the knowledge that has been produced by the other methodologies and look at things from a fresh angle.'

The internal tension within the group arose because the critical approach had a 'moral superiority about it, in so far as they would say, well of course all these other searchers for truth only go so far; in fact, they don't look behind the hidden agenda, the interests of the researcher which, unconsciously perhaps, work on behalf of other interests. And in that sense I felt, yes, they are right, but they need to be a bit less arrogant and pushy about the supremacy of the critical perspective.' In fact 'critical theorists were driving hard the other two (and there) was an attempt, I think, to hustle the other two perspectives'.

Writing course materials for external students was 'a challenging difficulty put in a most positive sense, because I am very used to a more intuitive approach to knowledge'. Indeed there was a danger that a course 'is over taught and that the curriculum dominates the learning processes of the student', however, 'I think as far as I can be satisfied, that those of us who are responsible for it, had in mind the learning, (of students) but, none the less, it was still heavily influenced by the "what do we know?", knowledge-based, content approach'. This knowledge based content structure within the materials was appropriate - the 'safe conservative in me, would at the end of the day, opt for what we have produced, which is a clearly signalled set of learning targets, and so forth, around the three methodologies.'

In working with the group the participant 'saw competent people working away, but perhaps a bit too determinedly'. Indeed, 'there was a certain fear of ridicule within the group, so perhaps there was a lot of attention paid in a way that I wouldn't have done. I wouldn't have cared, so much, about what someone else thought about my material because I am very familiar with academics telling me if they only had more time, they would have done a much better job than I had done: and, I have seen them still telling me that, when I have produced a lot more than them. So I am not too worried about that.'

In effect, 'I think some have a holistic grasp on the three paradigms and the practical application thereof and where they fitted in the whole scheme of the Masters degree. In that sense that was highly commendable. I can think of one or two people that came at it through their own myopic interests, whatever they were, and they were driven by their particular ideological concerns, but basically the group was mature enough to absorb them, let them do their bit, and fit that around the rest of it.' Overall, 'we have worked, and me less so, very effectively, so there is nothing I would

particularly change at this point in time with the process'.

The situation where one group is proposing to rework the materials is seen to be 'playing to be so different' - indeed, 'to pull out, and go their own way, I think they were doing themselves, and the rest of us, a certain injustice.'

Conversation D

For this participant one focus of the conversation was upon the writing and reviewing processes. 'I am beginning to realise how complex they are, and how this kind of work, writing external materials, is truly one of the most difficult academic tasks we face. I have become convinced of one or two things in the development of materials; for example I think it is very useful if the team can come to terms with the structure of the unit and student assignments right at the beginning - that really gives direction to how the content should be developed. Now in this unit, right to the end we still didn't have the assignments and unit structure - what the students would actually do week by week only got thrashed out at a very late meeting. Next time, I'm going to do my damdest to make sure we work those things out early in the process.' Also, there is a dynamic and, in-part, unpredictable element involved in writing and reviewing - 'the whole of the development process, and it is not only this unit, but any unit, it seems to me, is quite chaotic. People bring in their ideas and their perspectives and make tentative plans; then someone else has a better idea, so you go up another track; and then you get someone who objects to that quite violently. In this case we had someone suggesting that they might leave the group if we were to continue with a particular line of thought.'

Once participants enter into the process there are inevitable pressures. First, 'you know, maybe, we shouldn't put too much pressure on people to write external materials unless they really want to - they are quite likely to opt out.' Also, 'the powerful persuader in this whole thing is the time constraint upon you. You have a deadline, it moves in on you, it creeps up on you and you just have to move on; if you get onto something that you think will work and you can see your way out of it, you decide to go with it - you just get caught up in the tide of events and you push on.' With multiple authors, problems can be compounded as 'when you change one bit it affects everyone else.' Further, the situation is not helped where 'occasionally, the writers wouldn't actually come to the meeting, so it was very hard to give them feed back - and it is a bit cold just to hit them with it by post'.

The outcomes of development were influenced by the content. At one stage, 'powerful arguments (were) posed for it being not the way to go (paradigm structures), and I must say I was partly convinced by them. For

example, each paradigm is discreet and self contained in that you can deal with it separately, when in reality, they merge and they mingle - it did worry me a bit that we compartmentalised the thinking.' One member 'was really opposed to the idea that as the students pass through each paradigm, so to speak, they would be persuaded that this was the best and only way to go....so I guess the nature of this topic really lent itself to people having conflicting views; maybe the very nature of this topic made the development process particularly difficult'.

Overall, 'I suspect we may have lost track a little of the students and what they were really going to get out of it. I have been in other units as well where the authors virtually become obsessed with their own work in the area, and their own thoughts; that's all very interesting but basically, we have to think about what use is this going to be to the students, and what are the students going to do with it.' In any event the whole matter was particularly complex; 'it was all the more complicated because we had multiple authors, authors of varying commitment to the task and drawn from different schools and different disciplines, and the audience they were writing for was also made up of quite different groups - nursing students, education students, and, all these other groups that are coming into the MEd, so I guess in this particular unit we just about had all the complicating factors, which certainly made it the ultimate challenge.'

The development process for these materials saw an 'extraordinary turn of events - the process was virtually over and materials were being finalised by the principal authors, when a future consumer of the unit came to learn of the materials, looked at the materials, and made the judgement that they would not be suitable for one particular group of students. Well this is very interesting, despite reasonably wide review, you wouldn't anticipate something like that; but it led to quite detailed discussion in a number of places and a further independent review of the materials.' These events arose because 'someone came upon the scene who looked at the whole thing in a very different light - the unit, as developed, was seen to over-emphasise issues and inadequately address method - really leapt out of the pages at this person'. This emphasis could have arisen because 'the frame-work probably does stir you particularly towards philosophical debate in the issues area. You can get a bit carried away with it; I mean, it is quite engaging getting back to the original philosophers in each of the areas. I have no doubt many students will enjoy these materials enormously'.

Conversation E

Upon joining the group the participant recalled; 'the first thing I wanted to do was to try to clarify where people stood; I took it for granted as soon as I saw the draft outline of the unit materials that there would be ideological disputation.' This initial action was taken because of previous experiences

where 'I have jointly produced external materials in groups where there were clear ideological differences.'

The way of structuring the unit had important consequences, as 'the paradigm structure tends to come from people working from the critical perspective, so it suggests to me that the critical theorists had the upper hand in the design of this unit and, where critical theorists have the upper hand, you are going to find some one on the other end bucking vigorously.' Indeed, 'the paradigm theorists, the critical theorists, have a vested interest in keeping paradigms separate, because that allows them, not only to be distinctive, but also, in a sense, to take the high moral ground'. On the other hand, 'there are strong vested interests in not acknowledging paradigm incomparability in that if you take an empiricist perspective, the thing to do is a bit of colonising'. Where paradigms are not regarded as incommensurable 'what tends to happen, is that the others get subsumed under empiricism; if you look at most of the research texts in sociology you find a swag of empiricist stuff and then, tacked on the end, there will be some qualitative theory, qualitative research methods and, that way what happens is that the more radical end of the spectrum gets screened out, and that which is still acceptable gets slotted in under empiricism'.

There was a further issue 'which is separate from the ideology but which is very important to me; that is, how good are these people at writing externally? If I am in a group based unit, there is, quite apart from the ideological position you take, your actual skill in writing good external materials. Writing good external materials is both difficult and important. A major difficulty is that 'the way this college chooses to produce its external material means it is all done in the cracks between your teaching load, and it's just not a professional way of going about it. If you want professional writing , my view is that you have to free people up to do it'. This was particularly important - 'I felt the need to produce very good quality materials. That is, materials that, whatever you thought about the choice of content or the ideological basis of the content, were at least of high quality, because I thought that would defuse some of the criticism. The other thing was to try and stay somewhere in the main stream, and not write in a way that was highly idiosyncratic.' As a writer the participant found 'the value of working with editors in their challenging what we had written. Again, from the point of view of instructional design, it is incredibly helpful to have an editor who says I don't understand what you mean here, and it could well be that neither would the students, or, an example here would really clarify. I found that immensely useful, and, as always, I found the feedback from colleagues when we did the reviewing very helpful indeed, in being able to see points where activities needed to be included, or where something needed unpacking and expanding.'

Working on the development of this unit had particular pressures - 'I was aware that this unit would be scrutinised far more tightly, and also far more negatively, than anything I had ever written before, simply because a

whole group of people in the program were going to have to take the unit sight unseen - and that's a sensitive issue in the college. People like to write their own materials and to be responsible for them and they don't like stuff foisted on them.' Also, 'I think a paradigm design was a courageous choice - I mean people, when they made the choice, didn't know that they were going to be catering for all these different groups. Had they known that, I wonder whether the three paradigm structure would have survived or whether a safer design might not have been chosen.'

The group had to contend with difficulties 'partly because the task is almost impossible, writing units for this range of students, and because people don't have ownership'. Also, the scope of the content and breadth of intended users for this unit was a matter of considerable debate. As 'this unit was to start giving people a broad exposure' it became clear that it could not, at the same time, address the 'nuts and bolts of, say, constructing a good survey' in the time allocated. In addition, we head to 'cover the diversity of students' by providing relevant study materials. Now you can't actually move from that position into the nuts and bolts of, say, constructing a good survey in this one unit and cover the diversity of students we've got.' In all, 'I guess the developmental work sometimes felt like a ideological mine field that needed to be picked through with some care'. Nevertheless, 'my experience of the whole business is it has been exhilarating. It has certainly had its moments but, I've enjoyed it thoroughly; I mean it has been a lot of work, it's been very time demanding, and I've learned a great deal.'

Conversation F

For this participant the group was engaged in preparing materials 'not just on preparing for a thesis. It's a unit about being able to understand research: research methods, research methodologies, and research designs; it's about being able to pick up some article or report about some particular piece of research, and to know where the researchers are coming from, and to know, therefore, the constraints, the limitations, the assumptions they are working within; it is about developing students' understandings to be able to critique what it is they are reading. So it has a dual purpose, as well as having multi audiences'. In writing and developing the materials it was found that 'there is just so much in this unit that really is challenging: challenging norms, challenging the *status quo*, challenging myths, which altogether make it a particularly interesting and worthwhile unit'.

It was said that 'working in the group was actually wholly advantageous rather than being a constraint; what it actually did, was, when you get a group together, you have got the collective wisdom there, and I think that can be really reassuring and really comforting....If there is a constraint about working in groups, the experience that we have had has shown that

we have a group of people who have had a lot of interest, and a lot of expertise in particular areas in research, but not necessarily experience in producing external materials - that becomes a problem when you have people writing material employing a format that is not potentially engaging as far as external students are concerned.'

In working on this development it was noted that it 'has been through a long process, a very careful process, and as I was going to say earlier, the course team has had representatives of the various sectors involved. But this could be misconstrued for two reasons, which maybe I should just quickly mention. One is that, here is a course that has been developed for the MEd but as other specialisations have come on board, they have, of course, not had representatives on this research methods course team. So what was once representative has quickly become unrepresentative. The second thing is the notion of representation from nursing; we had representatives, but they were not advocates'. That is, they were not advocates of the collective understandings and works of the MN course planning team which became evident when other members of the MN team rejected the orientation adopted for the unit.

'On reflection we should have clarified the role/responsibilities of representatives; what does it mean for representatives to be advocates for their colleagues? In working with the group, the watershed, was when we reconvened after a period. When it started we were meeting every two months - it was still three years prior to this thing going. We met for about a year, developed the outline which was approved by the accreditation process and then decided to leave things, because it was so far ahead; when we reconvened, some of the old members had left for various reasons, one was overseas, one was too busy, and all that sort of thing, so a new committee was formed. The new committee also included nursing representatives, so immediately there was a different combination of people'. And, overall, 'I guess I am extremely happy with the way that this group actually worked together. I think it could have been improved on reflection, I think we could have even been more critical, more penetrating in our reviews of each others work.' However, with hindsight, 'I guess if I had to experience this whole process again, I would really need to make sure that we had a group there who were quite clear about what their role was, particularly if there were representatives of different interest groups. Also, I would be more open in attempting to establish a set of norms where there was this notion of shared leadership and understanding. So a significant problem, when you get such diversity like this together, is that the resultant group can have lots of interests - "I really want to be here" for all sorts of motives - but have they got both the expertise in the subject area and experience in external studies production, let alone have they got any expertise of working in a group. So that needs to be established, early, and then the notion of looking carefully at, what is this unit supposed to be all about - considering, therefore, what the aims and objectives are - what are the possibilities for the assessment items; and, in

the best interests of developing external materials, how are we going to exploit readings, engage students through Study Guide activities, what should be the nature of those things. That should have all been done on reflection, earlier, but it is still ultimately going to be done anyway.'

The 'watershed' was based around the acceptance by the group of a paradigm structure for writing course materials. Prior to this stage the theoretical assumptions with which methods are imbued were, to some extent, disconnected and 'here was an alternative being proposed, which was saying, we really need to integrate both - it was accepted. I think it was accepted because the changed membership of the group comprised a membership which was *au fait* with the paradigm approach'. Indeed, 'I think we all had a common agenda when we reconvened the group, decided on a paradigmatic approach and the aims were sort of subsumed into that'. This structure allows for consideration of examples like I heard the other day - 'If you're really interested in emancipation and you want to undertake some research that's going to foster the emancipation of a particular group of people, and no matter what the setting, what are the implications of that for the process of research? What should the research look like? Now you might argue ultimately for a highly positivistic view, you might argue for more interpretive, you might argue for something that's critical in orientation, but ultimately it's the cogency of that argument, which wins the day as to whether people then accept that that type of research you are doing is actually going to be acceptable'.

Producing external study materials has particular pressures - 'To produce the public document, certainly adds pressure, but personally I take that as a very positive thing, because it also provides you with a sense of care that before I release anything I'm going to make sure certain people have reviewed it. Whereas if I was doing something on my own, it would ultimately be between the students, and me, and no-one else needs to see it. I mean it is still a public document and in a sense, people could pick it up, but, not like this one, which is going across campuses. A lot of different people, are really keen to have a look at what's been written, and I know there are going to be a lot of people who are really critical; some already have been'. Indeed, 'there are critiques and critics, and seemingly having public documents is bringing them all out of the woodwork; those who are very constructive in their criticisms and those who are potentially very destructive.' In fact, outside of the processes decided by our group there have been further reviews - 'we have been pilloried, quite pre-emptively, based on an early draft and some uncompromising preconceptions.'

Also, 'producing external materials in this college, is not an easy process anyway; it is the lack of support in terms of the provision of time more than anything. Your worth here, is still measured by nothing other than carrying this certain student load, and so, time to do research and writing, and whatever, is not valued as the same as carrying a student load....You have still got to mark your greenies (assignments), you have still got to

attend your classes, you just carry this on top of everything else. There is no formal credit for it at all.'

Overall, the unit and the writing, 'is courageous, and (I) personally feel very happy with it as a beginning, and I believe it will become, ultimately, much more courageous and much more challenging as both a course in research methods and as an external studies package'.

Discussion

I would like to identify some factors which were common to the majority of participants. Most participants viewed the development process as a contest between ideas, values and people. Further, this contest was sharpened upon the adoption of a paradigm design for the course materials - yet, paradoxically, with the adoption of this design the writing of materials was able to proceed. Another common element was the concern expressed about the theoretical 'locating' of the critical paradigm - if there was contestation much could be viewed as a reaction to the perceived role (moral, political, social, epistemological) of critical theory within the identified three paradigm structure. A further common concern was related to the public nature of external delivery - there were skills in writing, translating pedagogical concerns into solutions which were appropriate for external students, ensuring that the materials were of 'high quality'.

In this discussion I would like to explore these common concerns using the notion of 'private factors'. Judith Riley's (1984) important study of the behaviour of members of course teams shows the influence of two kinds of factors: public and private factors. She writes:

> In the public category come considerations that can be termed getting it right for the benefit of the students, or to do justice to knowledge itself. These are the criteria that are stressed by the existing manuals on distance teaching and which tend to be used in public commenting on draft materials. In the private category are the more personal concerns of making the task not too onerous and of protecting and developing the author's image with his colleagues. These private concerns are essentially considerations of the self doing the drafting but are just as apparent in people's behaviour as the recommended public criteria (p. 47).

Later she notes,

> Whether these personal concerns should influence the preparation of teaching materials or not, it is clear that they do so. Consequently, I would argue for their inclusion in any advice in the preparation process. My own opinion is that the process of preparing distance teaching materials is so bound up with the feeling and individuality of

> the staff concerned, that their personal concerns are a crucial positive force for overcoming the many problems involved and creating the numerous innovations that are needed for success (p. 48)

I believe that any interpretation of the events surrounding the development of the curriculum and course materials must deal with private concerns and the feelings and individuality of staff. Thus, a key consideration in understanding the writing of these course materials involves identifying ways in which the group can acknowledge the worth of individual authors. So key questions about the development process are, what helped to protect and develop an author's image and how did participants operate in ways which reduced possible conflict?

To understand these issues it is instructive to return to the common elements of the conversations. Contestation, paradigms and the 'locating' of the critical paradigm can be closely linked. The matters surrounding each author's perception of the others' abilities to write teaching discourse will be considered separately.

Before looking at these issues it is important to note that the content under development carried within it values which are the very centre of the-individual-as-an-academic. Being academic, for those involved, meant that each had to acknowledge the other's ability as a researcher; since the writing and reviewing revealed beliefs about each academic as researcher (and researcher as academic) this acknowledgement was especially important. Interestingly, mutual acknowledgment as skilled writers of external teaching materials, that is, academic as teacher, was an element of the dynamics of the group but its resolution was less urgent (perhaps also, less important) than the matter of researcher identity.

Contestation, paradigms and Critical Theory

As already mentioned, most participants saw in the development process a contest between ideas, values and people. Conversation A, noted contests between 'those who think about research, rather than do it' and those who 'hold a passionate commitment about particular sorts of methods that are superior to other methods of research'. Contestation was noted in conversations D and E. As participant D puts it, 'I guess the very nature of the topic really lent itself to people having conflicting views' while participant E recalled, 'I took it for granted as soon as I saw the draft outline of the unit materials that there would be ideological disputation'. Participants B and C expressed concern about the outcome of such contestation - the choice of a structure to present information had, in their view, predetermined the result. The structure was 'heavily biased' (conversation B) and designed to 'come up with the critical paradigm as the one and only one' (conversation B). Likewise, participant C saw critical theorists driving

hard the other two and (thought) it was an attempt ... to hustle the other two perspectives'.

Contest became a viable notion with the adoption of a paradigm design for the course materials. In the Kuhnian sense, paradigms acknowledge a role for a form of tacit or personal knowledge which is seen in the shared understandings and beliefs which form part of a paradigm. Paradigms have three characteristics. They operate as a coherent set of organising ideas; they have an artefactual, technical or methodological meaning in that a paradigm provides legitimacy to certain forms of activity and experimentation within its operating frame-work; and they have a sociological meaning in that there exists a 'community' which operates not only from the theoretical knowledge base of the paradigm but also from a belief base about the potential worth of the paradigm in resolving and explaining 'the world'. Clearly, paradigms signal a wealth of shared understandings - they act to symbolise a set of 'tacit understandings' which can be directed by and explained within the operating framework of the paradigm (see, Masterman, 1970)

Consequently, linking authors with paradigms signified the legitimacy of the knowledge to be written about and the expertise of the author, either as a researcher familiar with the techniques employed by the paradigm or as an academic familiar with the debate about research paradigms. Contestation became a significant factor with the inclusion of the critical paradigm which challenges, through critical theory, the notion of incommensurable standards embedded in each paradigm. Complementary diversity was now a difficult concept - approaches may complement but, for some, the critical paradigm could well encompass, subsume, and reorganise the attempts generated through the other two (complementary?) paradigms.

So the mechanism of labelling approaches as paradigms and perhaps identifying a staff member's expertise in terms of an association with a particular paradigm (after all, there was a practical problem of who might write materials for each of the paradigms) both resolved and promoted contestation. In a practical sense the mechanism resolved the situation, allowing staff to get on with the writing process by assigning experts to particular approaches - to some extent, it affirmed research expertise and, to the extent that writers confined themselves to standards within the paradigm structure, it removed the contestation which resulted from comparability of standards across paradigms.

Thus the paradigm approach provided a way of 'tagging' key authors and was recognised as an identification of an individual's expertise. It was thought that sensitively written introductory and concluding 'chapters' could handle practical matters associated with using a single or mix of paradigm approaches, comparability or incommensurability, and overarching issues of a political, ethical, social or ideological nature. The effect of this would be to protect authors writing within a particular paradigm

framework from specific critical comments raised by other positions - this was particularly important as each author had to produce materials to the same schedule and, thus, there would be limited time for reading each others draft materials. Also, key aspects of the assessment were held back until each of the writers could frame their tasks in mutually satisfactory ways.

These mechanisms helped in resolving problems. Materials could now be written simultaneously by a number of authors with the division of labour constructed in ways which respected the 'individuality' of others and protected their own. Participant F recalled that 'I think we all had a common agenda when we reconvened the group, decided on a paradigmatic approach and the aims were sort of subsumed into that!'

There remains the problem of why the initial structure of the unit was not developed into course materials. One factor which may have influenced this is that this structure largely avoids the conceptual distinctions which were used to assign (and protect) individuality of authors in the revised structure. Without these distinctions and implied value positions each writer would have little idea of the particular 'individuality' which might appear in the writing of co-authors. In effect, each author might expose a particular set of beliefs which could well have been dismissed by co-authors. To avoid such possible conflict, authors would have to retreat to a technique or skills orientated course, whereas it was acknowledged by all that, in their personal experience of research activity, the matter of values (ideology, ethics, politics etc.) were key elements of the practical activity of researching.

Thus the common concerns surrounding contestation, paradigm design for the materials, and critical theory can be linked to Riley's (1984) private concerns. Some participants were clearly aware of these links but distanced themselves from direct ideological disputation - for example, participant A suggested that contestation between authors was unnecessary as 'you don't ask a colleague to develop materials as an individual unless you respect their authority in the area'. Conversation C reveals that the participant 'wouldn't join any one of those groupings because I didn't feel that passionate about any one of them to want to be seen to be on a side'; participant B saw the structure encouraging 'set piece battles about the most appropriate way to understand and to research and to interpret and so on, seem somewhat historical and "dinosaurish".'

Whether these approaches to reducing contestation constitute a psychological safety net to protect individual 'images' is debatable - certainly there was little direct evidence that experienced and capable academics working on developing these materials would have used the concept of a 'safety net' themselves. Perhaps the watershed nature of the paradigm design is to be seen in pragmatic and practical terms rather than theoretical - with its adoption the course was completed.

The other key 'private concern' involved protecting and developing an author's image. This includes the ability of an author to write course materials which *teach at a distance*. Writing external materials was a 'challenging difficulty' (conversation C) and 'truly one of the most difficult academic tasks we face' (conversation D); 'an issue very important to me is how good are these people at writing externally' as 'writing good external materials is both difficult and important' (conversation E); 'producing external study materials to produce the public document, certainly adds pressure, but personally I take that as a very positive thing, because it also provides you with a sense of care' (conversation F); external course(s) have 'to be planned much further ahead (which is) much more restrictive' (conversation B).

There was no doubt that each of the participants respected the others for their ability to write academic articles - but, as was often noted, writing external course materials involves different skills and each participant was unsure of the range of skills possessed by fellow contributors. This matter proved to be a particularly difficult one. Because time had been spent on resolving the issue of a paradigm structure, there had been little opportunity to discuss or model approaches for generating 'teaching discourse'. Each participant was acutely aware of this pedagogical concern - however, its resolution had, by necessity, been pushed to one side awaiting a structure. The complicating factors made this a high risk activity - these were innovative materials for a diverse group of students. Further, during the writing, the structure of one of the awards changed, thereby changing some of the initial purposes of the course in relation to the award. Little wonder, then, that much of the 'teaching discourse' was seen to evolve after the two formal reviews. The only 'protection' for authors was to suspend full engagement with such matters until a 'clear view of the whole' was available. Consequently the determination of the assessment and other process concerns was left to be infused into the writing later.

I have made much of these private factors because I believe an understanding of their influence leads to the position that it is impossible to separate out the development of the curriculum from the writing of course materials. When the *Issues and Methods in Research* unit was first developed it assumed many of the characteristics of group based, face-to-face teaching - indeed, there was a certain fluidity and openness to the way that the course could operate in that a seminar session might be followed up in particular ways arising from student concerns and interests. When the group was faced with the translation of these assumptions into external teaching materials it was immediately recognised that both a plan-as-you-go approach to teaching and the progressive generation of the content from seminar interactions was out of the question. This, along with the influence of the private factors already described, resulted in significant changes to the curriculum - while there is an overlap in the objectives stated, some would argue that the revised unit is significantly different from the original plan. Indeed, this perceived shift has been cited as one reason for 'reviewing' the purposes of this course in the context of one of

the awards. The lesson here is that the development of external materials has meant that significant academic and pedagogical decisions have been made resulting from the discipline necessary to meet the needs of distance education - the outcomes of this development are not independent of the group and represent, for the group, a major staff development opportunity.

This interconnectivity between curriculum development and writing means that assisting in one area influences the other. I see my role as working with academics to assist in matters relating to the design and writing of course materials. To be seen as effective it is important that one engages in the dialectical relationship between curriculum development (design) and writing within a framework which assigns a priority to Riley's private factors.

Conventional instructional design theories, of course, fall far short of recognising and dealing with these complexities. Instead, they opt for a process oriented description, a severely truncated view of the reality surrounding the development of teaching and learning materials.

In this case study I have tried to address the complexities of development. While I have provided an interpretation, I hope that readers may formulate other versions through their analysis of the conversations. To conclude, I would like to thank the staff that so willingly participated in this case study and acknowledge an intellectual debt to Judith Riley. When I first read Judith's work I was stunned by its 'inside-out' theorizing - it has taken some four or so years for me to pluck up the courage to try to theorize in a similar way. I would hope that her concluding paragraph reflects also the intentions and spirit of this study:

> Basing procedural recommendations on the practices of successful teachers, avoids having to tease out the criteria of 'good practice'. I have indicated that for me, a good process is not only one that results in good teaching materials. I am also concerned with other products: for every course produced has effects on the staff and the institution concerned. The staff have changed: learned new knowledge and skills, and gained or lost in status. The institution has paid out its resources and gained a new course, which will affect its reputation and perhaps its future income. I am also concerned that the experience of producing a course should be good in itself, while it is happening - efficient and stimulating and not too stressful (1984, p. 53).

Note

[1] I would like to acknowledge the excellent work of Wendy Mastrillo in transcribing the audiotaped conversations.

Chapter 11

Before...and after: MBA participants' first year experiences of distance learning

Dale Holt, Stanley Petzall and John Viljoen

Introduction

Deakin University's School of Management offered the first distance taught Master of Business Administration (MBA) program in the world in 1981. It is a four year, part-time program which contains thirteen core units; students have a choice of three electives from a range of nine units to complete the sixteen unit qualification. Students take their three electives in the final two years of the program. The first two years of the MBA concentrate on discipline-based units (organisational behaviour, accounting, law, economics) whereas the final two years focus on functional (finance, personnel, marketing) and integrative (management policy, operations management, electives) management-based units.

In 1988, eighteen students from that year's entry of 65 students were invited to participate in a qualitative, longitudinal study of the MBA experience. Morgan (1984) provides a useful account of the nature of qualitative research methodologies and their value in being applied to research issues relating to student learning in distance education. The students were interviewed before commencement and again after their first year of study. They also will be interviewed at the end of each of the final three years of the program. Students' entry-level conceptions of distance education, management, learning (about management), their career aspirations, initial orientations to study and various personal factors were studied (see, Holt and others, 1990; Viljoen and others, 1990).

Here we examine participants' first year experiences of the MBA program in the light of what they brought to the professional development experience and what occurred during the first year. A fundamental theme of the paper is to illuminate the extent to which the MBA has proven to be useful for the professional development and growth of participants. Such a piece of illuminative research cannot look at the impact of the MBA on participants' professional competencies alone. Therefore, the paper focuses on the interrelationships among the professional, educational and personal worlds of MBA participants.

Methodological considerations

Longitudinal studies of a qualitative nature are time-consuming and require both persistence and stamina, particularly during the stages of data gathering in the field. Qualitative research is only as good as the quality of interaction between the researcher and student. No matter how brilliantly conceptualised a project may be or how cleverly the research data are interpreted and presented, a qualitative piece of research will be fundamentally flawed if the investigators fail to go about their work thoughtfully, creatively, flexibly and enthusiastically in the field with their students.

Qualitative research is not characterised by a single, discrete process of data gathering, analysis, interpretation and writing up of results. It is essentially iterative in nature with much movement between the student world (data gathering) and academic world (analysis, interpretation and presentation of work). Often checks on the reliability of the investigator's interpretations can be found back in the students' world when students are provided with the opportunity to assess whether 'recognisable realities' exist in the researcher's work, as presented to them, on their perceptions of what they do and why they do it. It must be recognised, however, that some students may not wish to avail themselves of such opportunities.

We have found that a team approach to our research project has greatly assisted in improving the quality of the fieldwork (a dual interviewer approach has been used in all interviews) and the quality of data analysis and interpretation. Initially, all interview transcripts were independently analysed, in detail, by two members of the research team who constructed short written accounts of their analyses, with the third member acting as an arbitrator during discussions and negotiations over the interpretation of meanings to be attached to MBA participants' comments. Invariably, interpretations of meaning overlapped, or different members of the research team focused on different, yet complementary things, to interpret. Different people looking at the same or different things, in similar or dissimilar ways, helped to enrich the interpretive process, although reaching consensus on interpretations was often an intense, but never tense, process of exchange and negotiation.

Given the magnitude of the project, the three of us have tended to specialise in particular areas of the research: the distance learning experience; changing conceptions and practices of management; and the impact of work and study on participants' personal worlds. This division of labour was seen as essential in writing up our work, yet has not been allowed to develop to the extent that the researchers have lost contact with the data pertinent to each others' specialised areas of interest. This would be counter-productive given that the fundamental aim of the research is to illuminate, in a holistic way, the experience of being an MBA distance learner. We are still acutely aware of the need to stay close to the data so

that interconnections can be made, but also to claim the benefits of some specialisation through division of labour to maximise the use of scarce research time. Furthermore, we have been determined to make progress in writing up our theorising and to avoid attempting to master all of the data. Clearly, there is a delicate balancing act to maintain between a preoccupation to master all of the data on the one hand, and the desire to interpret the data expeditiously and publish the results on the other.

Grace (chapter 3) states that the qualitative researcher undertakes an 'intellectual journey... through progressive stages of engagement with the field of study. In such a pattern the evolving direction of the project is produced by the tensions between various factors such as the researcher's conscious purpose, the tacit assumptions and value systems (or prejudice) which guide his or her approach, and the events produced by the conduct of the research'. In an important respect, the success of our research in illuminating the processes and outcomes of the MBA participants' attempts to negotiate their own professional odysseys will depend on our ability to negotiate effectively the nature of the intellectual journey that Grace describes. This requires the working out of a consensus among the researchers themselves on purposes, assumptions and value systems which guide the research. The reconciliation of different researcher agendas, in group-based qualitative research, in order to find common ground in exploring our informants' meanings adds a further layer of interpretation and negotiation to this style of research.

Changes in orientations to study

The use of the concept of educational orientations to study in distance education was developed by the UK Open University Study Methods Group as a critical ingredient in influencing the quality of learning (see Taylor and others, 1981a) The Study Methods Group identified four general orientations: vocational, academic, personal and social. With the exception of the social orientation, intrinsic and extrinsic interests were associated with each of the other three educational orientations to study.

Participants, on entering the MBA program, articulated a strong vocational/intrinsic orientation to their studies. That is, participants wanted to learn something about management to improve their professional effectiveness. Participants specifically rejected the idea of the MBA as being nothing more than a means toward achieving a better job or salary prospects, i.e. credentialism. However, participants were looking for different things from the MBA curriculum ranging from an entrée to the field of management (technical specialist agenda), skills to run an organisation more effectively (senior manager agenda), knowledge of strategic management in anticipation of running an organisation (middle manager agenda) and competencies in managing more effectively (project manager and

technical specialist agenda). Different participants had different agendas on what sort of managerial knowledge they wanted to acquire (functional or strategic or both) and what purposes they wished to use it for (to improve individual, divisional or organisational performance).

These different agendas seem to be shaped predominantly by a person's position and managerial experience (either direct or received) in an organisation. Therefore, participants' perceptions of professional development and their successful professionalisation are likely to be influenced by changes in managerial position and experience which occur outside the MBA program as well as the impact the program itself has on changing the entry-level agendas participants bring to the program.

In summing up, student agendas refer to what participants want to derive from, or take out of, the MBA program in terms of enhanced professional competencies. Learning agendas are shaped by participants' perceptions of themselves as people and professionals, the way they define the MBA as an opportunity for professional development and the extent to which they are prepared to exploit this opportunity to improve their professional performance.

Participants' perceptions of their first year experiences of the MBA indicate that their initial expectations had been met, although they had not been fundamentally changed by the program itself. There was some evidence to suggest that job changes within the organisation had an impact on some participants' initial agendas. Again, while not fundamentally altered, these internal job changes, and the new relationship between the changed job and the MBA, had helped to clarify the initial agenda of the participant or allowed the initial expectations to be met more intensively, i.e. expectations were surpassed.

Clearly, positive job changes provide greater opportunities for applying MBA learning at work which, in turn, strengthen and reshape the initial expectations. More generally, the opportunity to study in the context of work, and work in the context of study, has in some cases, allowed participants to get more out of the MBA more quickly than they had initially expected. As one participant noted, his initial expectations were strongly affected by his undergraduate experience where no nexus between work and study existed. On the other hand, some participants in technical specialist positions with few management responsibilities indicated some frustration, which they perceived as being not necessarily unhealthy, in not being able to apply their MBA learning at work. Such frustrations appear to be encouraging these participants to seek management positions.

After one year of the MBA program, it is premature to conclude that participants' expectations of the MBA will be met and that these expectations will not change as a consequence of change in participants' professional worlds and educational experiences. We believe that more dramatic job

changes which are likely to take place both within and between organisations will have a significant effect in challenging participants to reappraise what they want to gain from their professional development experiences. Furthermore, as participants develop a fuller understanding of the nature of managerial work through their MBA studies, we believe that the MBA experience itself will have a more discernible impact on both defining and meeting expectations.

Participants' experiences of the MBA curriculum and assessment

Based on their study of the first four introductory units participants believed that it was premature to make definitive judgements on the adequacy of content selection and coverage in the MBA program. For most, the first year units represented new material and, from this standpoint, there was a general feeling that there were no glaring omissions. To the extent that content omissions were identified, there was an expectation that these would be studied later. Overall, as self-declared novices in the areas covered, participants appeared to place considerable faith in the curriculum designers' judgement as to what content should be covered. Participants appear, at this stage, to be far more forthright in their views on the learning quality of the course materials and the adequacy of assessment procedures than they are on the basic curriculum issues.

Participants were overwhelmingly positive about the benefits of progressive assessment. Assignments were seen to be an ideal opportunity to demonstrate research skills, written communication skills and to develop specialised knowledge of certain areas. Furthermore, assignments also provided a necessary external discipline to keep moving through a course; unconstrained flexibility was perceived to be dangerous given the competing commitments on participants' study time.

Those participants who were particularly comfortable with a subject enjoyed the opportunity to take control of their learning through assignment submissions. There was a feeling that a strong causal relationship existed between effort expended, and learning and marks achieved. This was contrasted with the perceived vagaries of examinations where such a close positive relationship may not exist.

First year MBA units rely on exams, although this emphasis diminishes in later years so that many of the MBA electives rely solely on assignment work. There was a perception among some participants that exams force students to synthesise a large amount of material and, therefore, are a good general test of someone's general knowledge and their ability to apply it quickly. Others doubted the usefulness of testing memory and subjecting students to unnecessary stress when they already operated in a high stress

environment. However, participants did experience an extremely high workload in assignment preparation which did not appear to be matched in time devoted to exam preparation. Hence, exams may be seen as 'better value for effort' than assignments. As a consequence, some participants argued that an appropriate balance needed to be struck between assignments and an exam while other more anti-exam types argued for a significant increase in mark weighting on assignments to bring effort expended in line with marks received.

Overall, even those participants who see themselves as good exam performers registered little interest in the option of being allowed the flexibility to opt out of assignments and to transfer the assignment marks to a final examination.

Assignment preparation and assessment feedback (discussed later) is seen as crucial to the quality of the MBA experience. Participants appear to immerse themselves in assignment work to such an extent that the workload becomes inordinately high, albeit enjoyable, intriguing and rewarding in nature. Often notional study schedules fail to build in adequate time to undertake assessment work (i.e. self-assessment and formal assessment activities) much to the detriment of students who prize this component of the learning experience.

Participants' experiences as distance students

Participants' expectations of studying at a distance were quite general on entering the program. While appearing to have given little detailed attention to the compatibility of their own learning styles with distance study, participants did articulate strong general expectations that opportunities should be provided for student-student and staff-student interaction through study groups, tutorials and residential schools; that formal assessment should embody regular and prompt feedback to assignments and that teachers would, more generally, be cognisant of participants' states of mind, and work and personal circumstances.

Furthermore, participants wanted encouragement, clarification of what the program wanted of them, and their learning to be interesting, applied, efficient, well-organised and structured. They were acutely aware that the time devoted to their studies would require significant sacrifice in terms of the time they devoted to their families, friends and work. We would not question the voluntary nature of this sacrifice based on a rational initial cost/benefit analysis of doing the MBA program. The scarcity of study time, and the strongly perceived sacrifice in *making*, as opposed to *finding*, the time for study led participants to place a high premium on efficient and effective learning.

The MBA program attempts to build learning bridges into the participants' everyday worlds by providing a rich and diverse array of resources for learning about management. From participants' comments, the program's learning infrastructure can be conceived as a number of layers

Layer one :	Printed learning materials
Layer two :	Supplementary reference material - Prescribed texts - Recommended texts - Library held journal articles - Audio tapes
Layer three .	Study groups, i.e. student-student interaction
Layer four :	Staff contact - Assignment feedback - Telephone tutorials - Individual telephone contact - Roving tutor visits - Residential school

Layers one and two: printed learning materials and supplementary reference material

Participants' learning experiences started with the study of the self-contained study guides with varying degrees of use of the supplementary reference materials depending on whether further clarification and elaboration of the core study guide material was required. Participants looked to the study guides to fulfil four generic functions:

- A clear and concise presentation of relevant theory, uncluttered by academic jargon.
- Some demonstration of how theory can be used to make sense of and improve managerial practice.
- Opportunities to apply theory to simulated situations and their own organisational contexts.
- Feedback, through both the learning materials and formal assessment, on the demonstration of these application skills.

While participants appear to perceive the existence of a theory/practice dichotomy, they do, nevertheless, demonstrate a strong capability to theorise on their own professional practices. Participants needed to grapple with the problem of assimilating 'external' theory presented in the MBA with their own personalised theories of management.

Overall, participants emphasised that good quality course materials greatly help to maximise the value of available study time whereas poor learning materials create unmanageable workload demands.

Layer three: study groups

The study groups were the most significant layer of academic support for the students. The MBA's mission, structure, residential school format, interactive learning materials, assessment strategies, roving tutor scheme and use of communication technologies all help to foster and sustain the development of face-to-face and non face-to-face study groups.

For some students, the study group lessened their concerns that distance education was going to involve prolonged solitary study:

> I used to think, and I'm getting into the study group bit but it does infringe, you'd sit there and you think to yourself, the study group, why do we need the study group, but in the finish it was absolutely imperative to have it and it changed my ideas as I went along.

> ...one thing that worried me about Deakin was that it was distance education, it really worried me, the term really worried me. Correspondence was worse of course, that would really trouble me, it used to cause me some concern, but I'm over that... And I got over that concern once we got the study group up and running.

There was a strong consensus that study group meetings were primarily assessment-driven. The tasks performed included:

- assignment and examination preparation;
- discussion of assignment feedback;
- resolution of problems relating to course materials;
- debate on the implications of the program for work practices;
- meetings and teletutorials with staff from Deakin, to discuss aspects of the course.

Participants perceived six major outcomes of study group processes:

- *Better Learning* - the combination of different skills, and the generally high aptitude levels of group members, were felt to be important features in improving problem-solving ability, and the rate at which learning occurred.
- *Motivation* - group meetings were seen as a means of re-establishing enthusiasm for study.
- *Productivity* - group membership provided the opportunity for

division of labour and specialisation. Thus, the group was both time-saving, and had a positive effect on output. This can been seen as a particularly important outcome given the pressures on study time.

- *Support* - the ability of group members to empathise and to give support and encouragement to each other, especially in periods of stress (times of high workload, receipt of unanticipated negative assignment feedback, social and professional commitments) was of great benefit to participants.
- *Benchmarking* - participants were generally able to compare their performance (in terms of assignment marks, understanding of materials, stage of progression through study guides, managerial issues faced at work) against others in the group.
- *Formal performance* - improvement in performance of individual members of the group was seen to occur as a consequence of the sharing of ideas, through discussion of assignment issues, and members' ability to pick each others' brains on work-related problems.

Layer four: staff contact

The most important point of contact between staff and students was staff feedback on assignments. Participants, in deriving maximum value from this exchange, stressed the importance of:

- advanced guidance on ways of approaching the assignments and the criteria to be applied to their marking;
- timely feedback which can be used as a basis for future assignment and examination preparation;
- constructive feedback which indicates where marks were lost and provides a positive way forward in improving performance;
- consistent marking of assignments both within and between different program units;
- congruence between a quantitative mark for an assignment and accompanying qualitative comments explaining that mark;
- congruence between the breadth and depth of answers provided in course material activities and the demands of formal assignment submissions (this relates to the point on the need for advanced guidance).

Participants, as explained previously, used study groups to fulfil the 'benchmarking' function through the provision of peer review of staff assessment. Providing such review helped to clarify what was required in assignments as well as setting standards of performance. Once these performance standards were determined - which generally took place during the study of the first two units in the program - there was a collective expectation that marking standards would be consistent within and between units, and between the first year and subsequent years of the program. Where standards were perceived to differ between units, and this variation was unanticipated by the group, participants reported dissatisfaction and a strong sense of demotivation.

Clearly, participants plan their learning and assignment strategies around what they believe is required in terms of effort and quality of thinking, and once having made this informed judgement, find it disconcerting when they are unexpectedly disrupted by apparently inconsistent marking. MBA participants, therefore, take a holistic view of their studies which is characterised by a strong expectation, both individually and collectively, of progression through the program once performance standards are understood. At a more localised level, it also appears that participants become dissatisfied with assignment feedback when there is a significant inconsistency between *their assessment* of the mark of an assignment and the actual *staff assessment*, irrespective of whether this is a significant negative or positive variation.

What the course expects of students' assignment performance is inextricably bound up with the ways in which the subject matter is approached. Participants who struggled to gain a 'feel for the subject' (i.e. the language and thinking methodologies of the subject matter) also found it difficult to come to grips with the formal assessment demands. This connection appears self-evident, however it highlights the need for distance teachers to induct students into the theoretical foundations of their courses.

In dealing with staff in forms of direct interaction other than assignments (e.g. face-to-face tutorials, teletutorials, individual telephone and correspondence contact), MBA participants formed a view of what they thought constituted a productive staff/student relationship. As one participant commented:

> Well, a tutor and a lecturer because the roles overlap, well they've got to present the work at a rate that leads someone along the appropriate path. They've got to provide feedback that both advises where the person is and also provides the motivation, stimulation to keep moving along the path at the right speed. And I think that they need to set up a relationship or a forum where the person can be perceived as being a contact point or an expert to resolve issues which may come along the way which may be both directly identified as part of the course material, or may be relevant associated topics. I mean it's absurd to

> think that a subject is really only those words in the book. I mean it's trying to build up a framework for understanding of those subject areas. And so if someone reads something in a newspaper or comes across a problem at work which is you know slightly outside the path that was defined in the course notes it's vital I think as part of a valid educational experience that the student feels able to talk to the tutor or the staff to say 'how does this apply in my environment?' Just do some reality testing.

A good staff/student relationship was further elaborated by participants in terms of the ability of staff to:

- come down to the students' level and to see the subject matter from their perspective;
- address student problems, not their own teaching interests;
- feed ideas into group discussion in order to enrich the cross-fertilization of ideas among group members;
- freely volunteer information to help clarify assessment requirements rather than students needing to 'extract information out of a person'.

MBAs were aware of the need to treat staff as individuals and to approach them accordingly, even though they had a strong sense of the appropriate teaching style required for postgraduate students undertaking a professional development experience like the MBA program. An appropriate style of dealing with distance students is particularly important given that part-time, off-campus study is, under the best of circumstances, difficult. Inappropriate staff/student relationships can quickly lead to demoralisation and dropout.

What constitutes 'quality' in distance education?

For our MBA participants, the characteristics of a quality distance education experience are:

- A significant degree of student flexibility in organising study around other life commitments, subject to some disciplines on study schedules like the demands of progressive assessment etc.
- A well-organised and structured study program.
- Properly constructed study guides despatched promptly, or preferably well in advance of the study period, which enable efficient and effective learning.
- Opportunities to interact with peers through study groups and also with staff.

- Staff who make themselves available to students, subject to certain constraints inherent in this mode of education, and who adopt an appropriate teaching style.
- A study workload which remains even and manageable over the duration of the program.
- A diverse, consistent and balanced formal assessment strategy where notional study time required to complete assessment tasks is included in overall study schedules.

Moreover, participants emphasised the need and demonstrated the ability to be resourceful in using learning resources in their own work and community environments which were not directly controlled or provided by the institution. Overall, participants were well aware that there was no viable option for doing the MBA other than studying it at a distance. Having settled on the choice of studying at a distance, participants approached their studies in a dedicated, enthusiastic and resourceful way. To feel or do otherwise, is unlikely to lead to the successful completion of a distance learning program.

Changing conceptions of: management, learning about management, and management practices

In order to understand the process of learning about management and the subsequent impact on management practice, it was first necessary to study the conceptions of management held by participants prior to entry into the MBA program. Analysis revealed that most participants began their MBA studies with a strong ability to use past experience to form a personal grounded theory of management. In fact, even those who had relatively little managerial experience were able to articulate fairly thorough conceptions of management - presumably on the basis of analysing the management they have received or observed within their respective organisations. It is useful to note that these conceptions of management are important for students, yet are omitted from the standard statistical and demographic profiles by which most participants are characterised at the time of entry into an MBA program.

Conceptions and practices of management

The research findings indicated heterogeneous and comparatively comprehensive conceptions of management amongst the sample group of participants. To these participants, management is an amalgam of highly personal choices:

- about how to use their accumulated talents;

- about the need to work with subordinates;
- about how to deal with specific constraints and the demands of their jobs; and
- about choosing an approach to their managerial activities with which they feel comfortable.

These conceptions are summarised in the Attributes, Roles and Choices (ARC) framework presented in Figure 11.1

Figure 11.1 MBA participants' entry-level conceptions of management: the ARC framework

Attributes	Conceptual categories
'What I have'	• personal attributes • human skills
Roles	
'What I do with others'	• teamwork and leadership • facilitating
'What I give to others'	• developing and managing subordinates
'What I have to do' (general)	• crisis handling • job content activities • communications • goal setting and achievement • problem identification and analysis • working within constraints
'What I have to do' (specific)	• strategic planning • organisational development
Choices	
'How I do things'	• applies to each role (above)

The ARC analytical framework was derived from the comments of participants using their language and expressions in the first round of interviews. An idea had to be stated explicitly or strongly implied before it was accepted as an element in the managerial framework of each participant. Participants' ideas formed the basic building blocks of the ARC framework. These building blocks were organised into thirteen conceptual categories of management. The thirteen categories were then organised into five personal inputs into the management process. These five personal inputs, in a final level of abstraction, formed the basis of the ARC framework. The development of the ARC framework took the research group through three levels of interpretation and abstraction, which became

more general in scope, as we moved from the participants' language to the final elements of the analytical framework.

It was evident that the first year of MBA studies had a significant impact on participants' conceptions and practice of management, without changing the parameters of the ARC framework itself. This impact occurred at two levels. First, participants recognised an increase in their management knowledge which affected their attitudes towards management. Second, participants recognised a change in their managerial behaviour. These outcomes warrant further discussion.

Some participants expressed the view that their initial conceptions of management had been strongly reinforced. As one participant commented: 'nothing's changed. If anything, its all got stronger - especially about people: involvement, leadership, motivation.'

The most common view expressed by participants, however, was that the MBA experience had enhanced their understanding of management in a variety of ways. Outstanding amongst these views was that they had been able to develop a more comprehensive awareness and understanding of managerial issues, especially in the area of human relations. As one participant commented:

> I think you always know certain things happen in response to certain actions... the MBA has deepened my knowledge of it in that I can understand how those processes take place....It leads you to know what you're doing, I mean, instead of bumping along blindly in the dark.

Furthermore, participants were aware of a significant gain in understanding and the application of specific skills and knowledge in the areas covered by the course materials. In particular, they appear to have developed more structured thought processes, as required by each subject area, and have been able to discard 'flying by the seat of your pants' and managing by 'intuition' and 'guesswork'. Also, the constant requirement to place learning into the context of their own work environment has clearly led participants to question more closely the strategic purpose and direction of their organisations. It led many to an increased realisation that 'you can't manage independently of the company, it all should be part of the big plan'.

Most participants were strongly of the opinion that the MBA experience had increased their propensity to reflect critically on the performance of both themselves and others in their organisations. The outcomes of such reflection were both positive and negative. On the positive side, participants felt that their approach to criticism and evaluation was more structured and coherent and that this improved their learning: 'I guess what the course really did for me was to show that there are better ways to manage if ... we just take the time to consider and reflect'.

The importance of critical self-reflection in the managerial learning process is supported by the work of Kolb and Fry (1985), Mumford (1980) and Mintzberg (1973). In particular, Mintzberg (1973) identified introspection as a key skill required of managers. Furthermore, Schön (1983) has looked at how professional people actually build their own theories of practice. While much of professional practice can become habitualised, Schön has observed that when practitioners come across unique situations this can stimulate reflection-in-action. Hence, a learning opportunity is provided where the professional person thinks about what he or she is doing or, rather, thinks about his or her knowing-in-action. This leads to the professional developing better practices. In the field of distance education, reflecting critically on practice in order to improve it has been seen as a key element in certain postgraduate professional development programs (see Forster and others, 1985; Evans 1987; Fitzclarence and Kemmis 1989; Smyth 1989).

Some participants indicated that reflection often led to a realisation that their current job was unsatisfactory either in terms of the type of job or the level at which it was performed. A marketing executive in a computer company concluded that through the process of critical self-reflection he now realised: 'This is not my job. I should be doing things which are at a higher level'.

Many participants believed that the knowledge which they had acquired through their MBA studies had led them to increase consciously the scope of their managerial activities. Many aspects of management had been demystified and they now pursued their tasks with a greater level of confidence. Part of this confidence was linked to the fact that participants were able to communicate more effectively with their subordinates and with functional specialists within the organisation. One vivid illustration of this was stated as:

> I am better equipped to be able to go and argue with the accountant about the fact that we screwed up the sales tax procedures - and to argue with him seven times because he didn't believe me the first six!

The MBA experience also affected the style of management used by participants in their workplaces. For most, the result was greater use of participative management techniques and the process of matching the goals of employees with the goals of the organisation. Furthermore, participants believed that the quality of their decisions had improved through their newfound ability to rely less on past experience and more on proven management concepts and techniques.

In conclusion, it is clear that the MBA experience has had a strong impact on the initial conceptions of management of participants. However, three conceptual categories appear to have been most affected. First, the knowledge and confidence engendered by the MBA has enhanced the personal

attributes component of the ARC Framework. Participants have a stronger belief in their own managerial capabilities and potential. Second, participants have an improved awareness of the *strategic* aspects of management and the contribution of their particular work unit to the overall performance of the organisation. Finally, and most significantly, the group of conceptual categories concerning interpersonal skills and relationships has been strongly affected. Participants are constantly redefining their managerial roles with respect to *'what I do with others'* and *'what I give to others'*. These impacts occur entirely within the parameters of the ARC framework, a framework which remains strongly representative of the managerial conceptions of participants.

Learning about management

Participants provided many valuable insights into how they used the MBA learning infrastructure (i.e. course materials, prescribed texts, study groups, residential schools, assignments) in order to pursue their individual learning agendas.

The factor mentioned by participants as being most important in the process of managerial development, was the opportunity to practice the ideas, knowledge and theories covered in the MBA program. One marketing manager in a pharmaceutical company explained: 'A lot of my managerial development is the studies I'm doing. But it is also the way that I'm putting it into practice, the way I'm using it'.

Those participants with limited managerial responsibilities frequently expressed frustration at their inability to place their learning into the context of their own work environment. All of our sample group were of the opinion that, in a management context, effective learning embodies a strong current and/or future use component. As a result, participants placed a high value on the course materials being presented in a manner which encouraged the use of concepts, ideas and techniques. One participant, a manufacturing manager, elaborated:

> When I'm finished a paragraph (of material in the course notes) I'll say 'what application has that got? Do I already use that technique? Does anyone else at (my company) use it? Does anyone else that I know in management use it?'....I'm after something I can apply.

Closely related to the issue of the 'usefulness' of course materials, was the idea that materials were more valuable if they allowed participants to customise their learning to suit individual beliefs, management styles and work situations. This notion (that management concepts are practised differently by different managers, thereby giving rise to individual and unique styles of management for each participant despite a commonality in course materials) strongly reinforces the role of personal *attributes* de-

scribed in the ARC framework. One participant explained: 'I might have the left arm of Mintzberg and the right leg of Taylor, but when *I* speak they're *mine*'.

Participants believed that their ability to customise their learning was enhanced if the course materials contained general principles of management (rather than specific details) which allowed them the freedom to apply these principles according to their specific needs.

As already noted, another important factor contributing to managerial development was the participants' local study group. Study groups act as a means of facilitating professional development in several ways. At one level, they were seen as a useful means of comparing levels of performance, discussing understanding of course materials, and receiving (and contributing) advice about work-related issues. One participant commented: 'We just talked about "what do you get up to? How do you handle this?" At that time I was sacking people as well and it was really tough'.

At another level, study groups acted as a stimulus for the competitive tendencies of participants and, as a result, motivated them to upgrade the quality of their preparation and contribution in group meetings. This created a dynamic and stimulating learning environment which participants felt had a strong positive effect on their individual managerial development.

It is clear that the interrelationships between study and work have a strong impact on participants in terms of changing their conceptions of management (though the overall conceptual framework remains unaltered) and their practice of management. Of much more importance is the fact that participants appear to have a good understanding of *how* they are learning - of how to use the learning infrastructure provided by the MBA program to achieve their individual learning agendas. In a distance learning program this represents the critical step from simply *reading* to *living* out the materials.

Organisational and family support: expectations and reality

Organisational support

As we argued in an earlier paper (Holt and others, 1990), an important element in the decision to undertake a relatively long and onerous course of part-time MBA study is the support the participants expect to receive from their employers. Our previous interviews with the respondents

suggested that employers' support might be broadly of two types: tangible and intangible. The former encompasses such things as payment of fees, time off from work, and the use of company facilities such as typing or computers. The latter is typically moral support and encouragement from supervisors and superiors to undertake the course, perhaps involving some promise of advancement on successful completion. These two types of support were not seen as being necessarily mutually exclusive.

Generally, it was found that prospective students expected that getting time off from their employers would be the most valuable form of support they could receive towards doing the course. In view of the typically long working hours characteristic of managerial jobs, this was not unexpected. In fact, the round of interviews, conducted at the beginning of the participants' second year of study, confirmed that time was the most valuable resource which the organisation could confer on students. (However, the imposition of a course fee meant that fee payment by employers was regarded as an important benefit by many participants.)

Of the seventeen participants interviewed, a large majority commented that time off from work, whether in a formal sense of whole days off for study, or in a more informal sense, in terms of flexibility to study during work hours, was what they most needed for the MBA.

Overall, it was flexibility rather than a formal policy of giving a number of days off to prepare for exams, which was most appreciated. A number of those who complained of excessively long hours which had to be spent on the job, and the pressure of their work, did, in fact, receive four or five days a year off for exam preparation. On the other hand, as far as intangible support was concerned, it was clear from the responses received that the presence of such support from higher level managers was not seen as particularly important, in terms of the progress of their studies, provided forms of tangible support were forthcoming.

Family support

In a previous paper (Holt and others, 1990) we concluded that most MBA participants were aware of the sacrifices which the course would impose on their family lives. Of our sample, all but one were married, and most had children, ranging from infants to teenagers.

Our initial interviews suggested that prospective participants would enjoy varying degrees of support from their spouses. While no spouse appeared to be actively opposed to their partner undertaking the course, in some cases it seemed that they were ambivalent or perhaps had not been fully consulted. Married participants without children, of whom there were

four, expressed the view that not having any children would be advantageous to them in undertaking the course.

In the event, it appeared from the second round of interviews, that some participants had underestimated the strain which the course would impose on their family lives. This generally manifested itself in the need to work at times which had previously been spent with the family, especially weekends. Many participants clearly felt guilty about this and about the extra domestic duties borne by their spouses. In some cases, too, MBA participants reported that their spouses seemed to feel guilty about distracting their husbands or wives from their studies.

The initial expectations about the responses of children to one of their parents undertaking the course, seem to have been realistic. Generally, those married participants without children, the one unmarried participant without any family commitments, and those participants with older, teenage children, experienced the least problems. Those participants with younger, especially pre-school age children, experienced the greatest difficulty. In a number of cases, such participants (all men) stated that their children did not understand their fathers' needs to be left alone over weekends to study. The mothers often had to take the children out, so as to create a quiet study environment. Also, illness among younger children created particular problems for two participants.

From comments made by a number of respondents, it appeared more generally that the course was imposing a strain on the relationship with the spouse. The biggest problem was simply that the couple saw relatively little of each other during the semester. Tempers seemed to become more frayed, and there were other manifestations of tension. Nevertheless, at the end of the first year, all the marriages were still intact, and most of the participants were considering ways in which they could use their time more effectively so as to leave at least one day over a weekend free for their families.

Career development aspirations

Elsewhere (Holt and others, 1990), we have classified the MBA participants into three categories, in terms of their career development aspirations: boundness, freeness, ambivalence.

These categories reflected the extent of congruence between individuals' career aspirations and what their jobs, organisations and industries actually had to offer to them. So, for example, an individual classified as job-bound was considered likely to stay in their job, because there was congruence between the job and career aspirations. An individual classified as

industry free was one likely to change jobs, and not necessarily remain within the same industry. Those placed in the ambivalent category were unsure about the congruence between their jobs, organisations or industries and their career aspirations.

Generally, MBA participants were fairly evenly spread between these categories. Depending on the category, participants expected that the MBA would provide them with either the skills and knowledge to assist them to progress in their careers along a carefully chosen path; or, more generally, that it would open up new options, and, in itself, indicate a new direction for career development.

From the second round of interviews, one fact became immediately obvious. Most participants took the view that career progression could not wait on completion of their MBA studies. Of the 17 respondents who survived in the course, 10 had changed jobs, in five cases also organisations, by the end of the first year of study.

From the moves which were made, it was clear that the original classification of participants into the three abovementioned categories, was substantiated. From comments made by the job changers, it appeared that their new employers were somewhat ambivalent about the fact that they were studying the MBA course. A view commonly expressed was that employers seemed to regard enrolment in the course as being advantageous. On the other hand, these participants were offered no special support for their studies and, indeed, the fact that they were occupying higher level jobs meant that generally the pressure on their limited time resources became greater.

Only in one case, that of a technical expert working for a large oil company, who was promoted to a position of business analyst, did the enrolment in the MBA make a crucial difference to career progression by the end of the first year. In this case, the individual felt, on entering the course, that his company did not view him as management material, and he hoped that undertaking an MBA would change this perception.

In relation to those classified in the ambivalent category, it was found that they were nearly all still in their original jobs at the time of the second interview, and expressed feelings of growing dissatisfaction. While they felt the MBA had already equipped them with new skills and knowledge, they were still no nearer to deciding in which direction to move on completion of the program.

Coping with pressures on personal life

It was anticipated that participants in an MBA program would experience some stress as a result of having to find an extra 15-20 hours a week for their studies. In our initial interviews, we asked participants some questions about whether they experienced stress, if so in what forms, and what coping mechanisms they used.

Whilst, to some extent, the experience of stress appeared to be personality-related, we did ascertain that work overload and problems in interpersonal relations seemed to be the main sources of stress which participants experienced. Coping mechanisms included working harder and longer hours, not taking work home, and the use of exercise, diet control and relaxation. From the second interviews, it appeared that the work overload typically generated by undertaking the MBA did pose some serious problems for participants in terms of trying to reconcile job, family and study commitments.

Generally, participants wrestled with the reconciliation of these commitments. The conflict was made more acute because MBA students generally appear to be characterised by a high need for achievement (McClelland 1984). They desire to excel at everything they attempt, and find it frustrating to compromise or to accommodate conflicting demands on their limited time.

A number of patterns of accommodation to this conflict could be identified:

- Those few who said they would aim for only satisfactory or even minimum, rather than excellent performance, to get through the remainder of their MBA.
- Those who were able to find time in their jobs to study without adversely affecting family life.
- Those who said they would try to use their time more efficiently and effectively, so as to avoid weekend work, but not compromise their course performance.

Overall, however, it is clear that no perfect solution was likely to be found to the problem of balancing the demands of the participants' professional, formal educational and personal worlds.

The heavy demands on time, were also mentioned as a significant source of stress which, in some cases, undermined course performance. There were a few extreme cases of ill-health. One participant, for example, contracted glandular fever, which he attributed to being generally run down by the pressures of part-time study, added to those of job and family. Another suffered from severe migraines, apparently caused by studying regularly late into the night. A third participant, who subsequently

withdrew from the course, entered hospital with asthma, a stress-related ailment.

Conclusion

We believe that educational institutions have both a moral obligation to understand better the impact their programs are having on students' thinking and practices and a pragmatic obligation to know something about the quality of the product/service being delivered from the customers' perspective. The style of research we are engaging in provides a unique perspective on how a particular professional development program, taught at a distance, is shaping the conceptions and practices of those people who are participating in the educational experience. Within the areas of setting and addressing learning agendas, developing formal assessment strategies and constructing and maintaining the study group culture, our research indicates that participants adopt a holistic view of their studies. They also perceive their own professional development in a very personalised way, although the ARC framework has still proven to be a useful representation of the totality of our participants' changing views on the nature of management. However, the professional development odyssey of our MBA participants has just begun. The capacity to track participants through their own professional development odysseys, and to make some collective sense of the process of professional change and growth, appears to be the great strength of qualitative, longitudinal research.

The team approach that we have adopted in undertaking the research has provided a rigorous and fruitful means of both generating and internally validating the conceptualisations of management and the experience of being a distance student that have emanated from an analysis of participants' own language and views. As the study progresses, the team will gradually expose participants to various aspects of the conceptual frameworks in order to externally validate them; that is, to see whether the conceptualisations of the nature of managerial work - the ARC framework - and the nature of the educational experience represent a 'recognisable reality' to our participants. In particular, we intend to explore in detail the usefulness of the ARC framework when participants have completed the MBA program.

While anybody wishing to become involved in qualitative research in distance education would be well advised to study its philosophical foundations, processes and outcomes, we would also contend that this form of research can only ever be fully understood by experiencing it in the field. There is a strong experiential component to undertaking successfully qualitative research in distance education settings. Furthe more, there is a

need to explore the interconnections between our particular study and others which have been completed (see, for example, Evans and Nation, 1987b; 1988, 1990; Gibbs and others, 1980; Gibbs and others, 1984; Morgan and others, 1981; Morgan 1988; Taylor and others 1981b; Taylor and Morgan 1986; and in this book Altrichter, chapter 9; Mousley and Rice, chapter 12) or are taking place (see, for example, Grace, chapter 3; Evans, chapter 4) in the areas of student learning at a distance in general, and professional development by distance learning in particular, so that the interrelationships among student worlds can be illuminated at a more general level. Here, we see the desirability of theory emerging on a broader scale through the process of generalising from a large number of detailed qualitatively-based case studies.

Chapter 12

Pedagogical evaluation and change: teaching and research in mathematics distance education

Judy Mousley and Mary Rice

IN CHAPTER 9, Herbert Altrichter makes the point that action research can be practised on two levels in the context of distance education. Firstly, action research may be used by tertiary students in examining and changing their own professional practices; secondly, university staff can carry out 'parallel' research into their own teaching and action research processes: that is, they can research distance education through action research.

This chapter explores the concept of action research and how it has been used at each of these two dimensions within *Mathematics Curricula*, a subject which can be undertaken by teachers as part of the Bachelor of Education course offered by Deakin University.

Action research

Henry and Kemmis define action research as being:

> a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practises are carried out (1985, p. 1).

Through a 'self-reflective spiral' of cycles of planning, implementation of plans (action), systematical observation and reflection - followed by further planning and action - practitioners can examine the need for, and effects of, pedagogical change. It is intended that, through this process, they come to understand more about their individual and collective classrooms and the nature of schooling.

Action research is a form of enquiry used by students in a number of undergraduate and post-graduate units offered by the School of Education at Deakin University. It lends itself to educational research by practitioners because it can be carried out with few resources, fits into the demands

of a normal school day and is often just an extension of, and more rigorous approach to, the reflective practice of good teachers. *Mathematics Curricula* students are required to work with small groups of colleagues to implement pedagogical changes; reporting on their use of cycles of planning, implementing, observing and evaluating educational change. While the teachers participating in the course do collect data about their pedagogical practices and the effects of altering these, emphasis is on the development of understanding of social situations as part of a wider cultural reality rather than on proving of researchers' hypotheses or collection of data for public dissemination. As Carr and Kemmis point out:

> Action research is not about verification from the given event nor about intelligent action coming from wise judgements arising from the immediate location of the event itself. The whole point of action research is to improve practice on the basis of dialectical critique of practice, to improve understanding on the basis of a dialectical critique of understanding and to improve the teacher's situation on the basis of a dialectical critique of the situation (1983, p. 165).

Action research in distance education

Traditionally, distance education courses offered by tertiary providers have been used by individual primary and secondary teachers for credit purposes. Evans and Nation (1987b) found that the acquisition of the four year credential was seen to be the most important reason for teachers undertaking a B.Ed. But relevance and professional development potential are vital factors in the preparation of distance education units for practitioners. Previously, teachers have expressed disappointment with the lack of relevance, for their professional and personal lives, of the knowledge presented to them in some courses (Evans and Nation, 1990).

However, as a result of our action research into the teaching of *Mathematics Curricula*, we contend that courses can be presented to practitioners in such a way that teachers themselves take responsibility for guiding their own learning as they adapt course materials to a wide variety of pedagogical situations, thus ensuring the relevance of course materials and activities. We also believe that there is potential for off-campus courses to stimulate the formation of collegial support groups in schools. These groups of teachers can undertake collective professional research into the improvement of teaching and, through discussion, deepen teachers' understanding of educational issues.

Planning course changes

Mathematics Curricula is a whole year (2 unit) fourth-level subject which is undertaken by between 100 and 150 students each year. As tutors and members of the course team, the authors have been involved in the development of this course since 1982. During the last seven years, *Mathematics Curricula* has been evaluated frequently and has undergone a series of changes.

Prior to 1984, the course was typical of those offered by the School of Education, where students were required to read study guides then complete individual assignments and exams. The nature of pedagogy largely reflected the 'instructional industrialism' view of education referred to by Evans and Nation (1989a, p. 245-6), involving a one-way process with ideas being passed from the university staff and study-guide authors to the students. Retention of content and the ability to apply it theoretically were key indicators of how well students performed in the course. Course evaluations were carried out every few years with focus essentially on seeking feedback about course content, student support services, organisational matters and specific course activities.

In 1984, the course team started to use an action research approach to their own teaching. An extensive student questionnaire and a series of course team discussions uncovered many potential areas of change. Both staff and students felt that *Mathematics Curricula* was having little impact on mathematics education in the wider field. Staff were concerned that the course content was removed from reality largely by the style of pedagogy employed. While students commented regularly that the course was really useful, others saw it as too theoretical, unrealistically idealistic or not closely related to their classroom practice. Participants pointed out that examinations and the limited style of assessment were not aligned with the dominant philosophy of the course - that people learn by construction of ideas through practical experience, reflection and active investigation.

Other criticisms were that the underlying philosophy was not obvious to course participants, and that there was no clearly unifying theme across the range of chapters which had been written by a number of mathematics educators and researchers. Assignment tasks did not help students draw the perspectives together, as they tended to focus on individual content areas and issues.

When students attempted to implement the teaching styles described in the course, they had little support from university staff, their school colleagues or the wider community. Taking on a new philosophy of education, which involves changes in teaching behaviours that confront the norms of institutions, would seem impossible in such circumstances.

The course team was concerned that extensive re-writing of study guides and readers was required to take account of frequent changes and developments in mathematics teaching. Thus sections of the course soon became outdated and seemingly irrelevant for experienced teachers, yet it was very expensive to keep producing good quality distance education materials.

Changes made to evaluation and pedagogical style

Over the period of our research into this course, evaluations have become more focused on styles of teaching and learning. Data are collected continuously through a variety of avenues. These include written questionnaires completed by students at the end of their participation in the course, telephone surveys to research specific pedagogical questions, informal evaluations carried out during telephone and face-to-face tutorials and the recording of incidental comments made by students during teaching sessions. Thus we now seek input from our off-campus students into decisions about the style of teaching and learning employed as well as the content of *Mathematics Curricula*. Evaluation now aims at finding out what is learned, how it is learned and with what effects. The course team meets frequently to discuss ways of responding to student needs and interests.

Through this continual process of evaluation and action during 1984 and 1985, it became progressively apparent that there was a need to involve teachers centrally and actively in a more adaptable approach to learning about mathematics pedagogy - to support and develop the capacity of practitioners for reflective action. Thus a most significant development was the involvement of teachers (our students) as researchers into educational practice, rather than as receivers of transmitted knowledge about teaching. The present emphasis in the course is on having teachers make well planned changes then report on the effects of their actions, thus taking the major role in their own professional development. University staff now act merely as facilitators of this process while students have become the creators of pedagogical questions - a challenge to traditional tertiary level tutor-student roles.

Traditional distance education courses reproduce the teacher-student dichotomy of regular classrooms, where the emphasis is on students as the only learners in a one-way transmission of knowledge. Grundy (1989) has suggested that distance education texts are used in ways which close students' discourse and believes that there is a need for more open texts which remain unexhausted. Through action research on our own practice, we have moved towards a situation where tutors and their texts are no longer the major source of valued knowledge. Theory is developed, tested and extended through student practice as teachers make changes to their teaching situations and activities.

Our course has altered in recognition of the belief that classroom research is eclectic; it is not exclusive in opinion and can draw on information from various sources. Personal action research allows teachers to start from their own philosophical, practical base and can ensure that teaching acts are made explicit. This enables teachers to make sense of what is happening and thus draw out implications which can lead to subsequent modification of classroom behaviours, or to an elaboration of theories of teaching which may inform future action. Most importantly, the ownership of research and the resultant knowledge about pedagogy is held firmly in the grasp of the practitioner. By investigating, reflecting upon and changing their own practice, teachers have increased their understanding of mathematics classrooms, content and learners.

In response to student needs, the emphasis in course tasks has moved away from individual, competitive study towards more cooperative professional research. As well as providing support for teachers studying at a distance, this has lessened the gulf between theory and practice to the point where students are engaged in praxis. In simplistic terms, the notion of praxis is a dialectical relationship between practice and theory. Theory is confirmed and extended by practice (Grundy, 1989). Although imposed theories have a place in learning through action research, they become personalised rather than reified, objective theories. Thus external knowledge is 'deeply revitalised' (Altrichter, chapter 9) through experiential classroom interaction.

Another major change implemented has been the expectation that teachers will work with colleagues while researching the teaching of mathematics. Some teachers surveyed in 1986 felt very much alone in the process of learning about teaching in that their research, while personally enlightening, was having little impact on their institutions. Progress made in one classroom was soon undone as children advanced through the school so teachers felt the need for discussion with colleagues to develop shared understandings and ideas. This was exacerbated by the fact that many country students were studying in isolation. Tutors, working at a distance, were not able to provide adequate support and contact, despite regular phone tutorials.

Thus, in the last few years, we have increasingly encouraged group enrolments and the submission of joint assignments. We require that course participants work with other teachers, since we believe that school-based research and institutional change should revolve around negotiation and collaboration between teachers. Present course participants work, as we do, with a group of colleagues to isolate and plan to improve upon inconsistencies within their teaching, and to become more aware of the theories - personal and other - that inform their practices. Thus assessment tasks are now essentially research conducted by teachers with teachers for teachers.

Observations

One of the factors about institutional change that we have come to understand, and expect, is the difficulty that teachers have in effecting real changes in mathematics classrooms. This is despite the fact that in recent years much of the mathematics education literature has focused on the deficiencies of school mathematics and the need to take more account of how children learn. Research (for example, by Sfard,1987; Hunting,1989; Fennema, Carpenter and Peterson, 1989) conducted into children's understandings of mathematical concepts confirms this need, yet most mathematics teachers are still largely bound by the traditions of teacher-centred classrooms. Our research now enables us to recognise more clearly some of the reasons for resistance to change. Real change in teaching involves taking on a new philosophy contrary to one's own educational experience, and changing teaching behaviours involves confronting the norms of institutions and the wider society.

Henry and Kemmis refer to the problem of confrontation that is common when teachers undertake action research on the social interactions within classrooms and schools:

> The pattern of resistance an action researcher meets in changing his or her own practices is a pattern of conflicts between the new practices and the accepted practices of the institution (accepted practices of communication, decision-making and educational work). By making a critical analysis of the institution, the action researcher can understand how resistances are rooted in conflicts between sets of practices, competing educational views and values, and competing views on educational organisation and decision-making (1985, p. 3).

Mathematics, with its particularly strong and powerful traditions as a 'key' subject and dependent on much rote learning and practice of socially-valued operations, is likely to be regarded as one of the most sacrosanct curriculum areas. However, in mathematics, as in all other areas of schooling, there has been a general move towards allowing and encouraging individuals to take more control of their own learning. This same movement has informed the changes that have been implemented in *Mathematics Curricula.*

The notion of teachers as researchers has brought about a change in our roles as tutors. The course now takes emphasis off reception of 'expert' knowledge from a distance and puts teachers into situations where they are participating in a systematic dialogue-based evaluation of what they are teaching and of their own teaching behaviours and practices. This challenges the assumptions that knowledge about teaching can be separated from the acts of teaching. While a change in tutor roles has had positive results, it has been difficult to initiate a mode of pedagogy where we are not the dominant partners. Students have, at times, expected more

'answers' and direction and we have found it hard to break habits of domination of the learning activity.

This form of professional development presents a set of values that we have had to work through: it endorses mathematics teachers as knowledgeable about, and capable of accurately researching, their own teaching practice as it stands within the wider institutional and social contexts. It has been difficult to know when to ignore potential problems and when to prompt, to interfere or to make suggestions as we watch the development of practice. We now formulate questions about teaching and learning, rather than attempting to provide recipes for effective practice, but this has been difficult in a climate where we feel that our research and experience has provided at least some of the 'solutions' to pedagogical problems. We aim to facilitate the creation of opportunities for teachers to render accounts of their experiences and reflections to their colleagues, thereby discovering linkages across individual experience, but we no longer take a direct role in setting up these opportunities.

Redefinition of traditional concepts of 'knowledge' has thus resulted in practitioners' knowledge, developed, extended and shared within schools, being the central component of the pedagogical interaction. This is not usually the case in university courses. Typically, Western knowledge, referred to by Altrichter (chapter 9) as 'systematised knowledge' of tradition, is transmitted through tertiary courses as if the only worthwhile strategies and understandings are those reified through the disciplines and recorded in text or other 'authorised' representations of our cultures. Practitioners' knowledge, on the other hand, is seen as 'related and located in specific sites', as it is based upon the products of their theories informing practice and the influences of practical activity on their theoretical stances. The benefits of students working in self-help groups continues to become more obvious to us and to course participants. Although previously such groups had been encouraged, they were not the active and influential professional groups they have now become. At the least, students talk to their colleagues and other community members about mathematics education for each assignment, but most go much further than this and establish working groups for sharing, planning and evaluation of teaching. Some students submit joint assignments, while others work together, but prefer to complete individual reports. Many work with teachers who are not enrolled in Deakin courses but who are interested in improving their teaching.

Our most recent evaluation indicates that this group activity is helping distance students undertake more meaningful and longer-lasting developments in their classrooms and schools. Teachers have reported that working in this way offers the collegial support and continual input of ideas that seem to be necessary for institutionalisation of change and for professional development. This, in turn, relieves the isolation frequently experienced by students when studying at a distance.

There have also been benefits to students in the development of common understandings about institutional constraints and ways in which these might be confronted. Henry and Kemmis claim that an important feature of action research involves self-critical communities of people participating and collaborating in all phases of the research process. Groups of participants, they say, should be:

> committed to enlightening themselves about the relationship between circumstance, action and consequence in their own situation, and emancipating themselves from the institutional and personal constraints which limit their power to live their own legitimate and educational social values (1985, p. 3).

Since encouraging the use of action research, we have certainly noticed a growth in the level of teachers' understanding about institutional and cultural factors which serve to dominate individual teaching situations and interactions.

Van Manen (1977) claims that it is only through the involvement of teachers in the process of communication with others and dialogue with self about actual problems within historically-embedded learning contexts, that an integration of educational theory with practice is forged. The students, we have discovered, are developing local groups of colleagues who support them in their studies, share ideas and references and act as peer tutors. This is helping to assuage, somewhat, the isolation frequently experienced by students at a distance, and by teachers whose schools do not encourage cooperative professional development. Group discussions are leading to the development of shared understandings about the ways theory and practice can have a reflexive relationship.

The process of learning through cooperative research in schools has not prohibited or denied the value of the introduction of ideas from outsiders such as ourselves, researchers and curriculum specialists. Students are expected to draw upon course materials and other readings which both explore the nature of mathematic pedagogy and present some options for ways of thinking about and teaching particular content areas.

We have found that external ideas and experience continue to be used actively and creatively by practitioners in their planning of, and making original contributions to, classroom practice and hence to the further development of pedagogical theory. But the study guides, set readings and optional wider reading are no longer used in controlling, disempowering ways which reflect a 'deficit' view of teachers' knowledge of mathematics teaching and learning. In response to our growth of understanding about the way mature-age practitioners learn, the essential bases of the learning process are now cooperative reflection, problem-analysis and formulation of plans for strategic action.

For some teachers, critique of practice is a new experience, as few opportunities are structured for teachers to critically examine their own roles in educational change. Working in a group has proved useful, as individual teachers generally receive little encouragement or opportunity to systematically evaluate and modify pedagogical situations, or even to clarify realistic expectations for themselves as educators.

Participation in action-oriented critical reflection and problem posing has enabled some pedagogical dilemmas to be exposed and solved. This applies as much to our work as to that of our students. We have found that this way of working has several advantages from the point of view of distance education. In groups, both we and our students can investigate teaching collaboratively, in contexts specific to our own professional situations. In the same way that we tackle distance-education issues, teachers define individual or group problems within schools rather than being presented with information about issues seen as important by the course team. They are assured of the support of people who experience similar settings and curriculum. This situation can reduce the isolation of students at a distance. We, as tutors, are released to some extent from the responsibility of understanding and responding to a wide variety of professional and personal needs and situations.

Investigating one's own pedagogical concerns involves operating to some extent in what Friere calls 'problem-posing pedagogy' a style of teaching and learning, where actors:

> develop their power to perceive critically *the way they exist* in the world *with which* and *in which* they find themselves; they come to see the world not as a static reality, but as a reality in process, in transformation (1972, p. 56).

In the present assessment tasks, participants are supporting each other through the processes of describing and confronting routine practices in their classrooms. As mathematics is likely to be taught in routine ways (Sirotnik,1983; Clarke,1984), teachers are rarely prompted to consider the ethical consequences of the routine and order or the intrinsic values expressed and perpetuated in actual teaching practices: studying about the teaching of mathematics did not involve confrontation of routinised, common practices. Before putting teachers at the centre of the learning process, we felt that conventional practices were rarely challenged. Young teachers usually uncritically take up patterns of teaching which they have experienced throughout their own schooling. *Mathematics Curricula* attempts to challenge teachers to consider routine practices as well as the wider questions of the roles of the educational system, its institutions and personnel. This investigation used to be difficult both to initiate and to support from a distance.

Recent evaluations suggest that teachers researching their own practice, particularly as members of a critical community, have the potential to de-

velop a more detailed understanding of those practices and the range of alternatives. Some have also gained a deeper understanding of constraints, from within themselves and their colleagues, to change. As Hutchinson and Whitehouse claim, the action researcher needs to:

> re-assess reality and commit himself to the notion that social reality is culturally created and contains contradictions of truth and value. In accepting this, and in attempting to involve others in a critique of practice: he soon encounters resistance from those who understand their professional competence to be a positive and direct outcome of the social reality that is confined to the classroom but cut off from the wider social and political contexts (1986, p. 93).

Recent evaluation

In 1988, feedback from informal tutorial discussions and assignment reports indicated that the course was effecting both directly and indirectly the teaching of mathematics. This initial perception prompted more systematic research by the Deakin tutors to determine the extent and nature of changes to teachers' philosophies and resultant pedagogy. We contacted a sample of eighty students from the previous two years by letter, telephone or personal interview. These teachers were asked a series of open-ended questions and were invited to make further comments about the course and its impact on teaching.

Our primary interest was to investigate the longer term effects of the course on the teaching practices of participants. A major concern was that changes made might be superficial and aimed towards meeting minimal course requirements, rather than innovations which would lead to institutionalisation of alternative practices in mathematics education.

We believed, at the beginning of 1989, that *Mathematics Curricula* was investing a diversity of teachers with the capacity to take more control over their professional lives; and particularly to capitalise on learning opportunities that are not planned, directed or evaluated by others. It seemed the assignment tasks were not only stimulating teachers to reflect upon the effects of traditional practices in classrooms and institutions, but more importantly, that it was enabling teachers to experience, and hence better understand, the possibilities of teachers being involved in the initiation and implementation of change to teaching and learning mathematics. We hoped that this process was assisting teachers to view both mathematics teaching and professional development as long term sequential processes under their own control. It was with the view to exploring whether the course was indeed meeting these objectives that our latest evaluation was undertaken.

Change was to be the focus of our investigation. Not only did we find some continuing restructuring of pedagogy, but also a growth in understanding about the nature of mathematics, the teaching of it and the processes of pedagogical change. Our findings, detailed elsewhere (Rice and Mousley, 1989) indicate that the course is powerful in leading to a growth of understanding in these three essential areas. Our interviews showed that the process of information gathering, critical reflection and trialling of teaching methods enabled many teachers to grow in confidence to the extent that they felt more able to tackle the difficult process of change, and even to lead an inquiry into mathematics teaching throughout the school. The course appears to have been a catalyst for a more pro-active approach to wider curriculum issues. For others, it provided an incentive to work as a group to confront and overcome negative attitudes: the legacy of their own schooling. They could see how restrictive teaching practices and poor attitudes perpetuate a cycle of fear and distrust. By being required to share their ideas with others, to consider competing, and often contradictory, interpretations of mathematics education, they began to perceive that many people feel as they do and have had similar experiences in mathematics classrooms. Prior to having our students work in groups, this personal support through regular contact with colleagues working together on pedagogical issues was not available.

We also noted a growth of understanding of the processes of teaching and learning. Research by teachers suggests a shift in teachers' reflection from educational product to the processes through which knowledge is learned. For some students, the tasks led to closer examination of the nature and origins of schooling in the context of wider social structures. For them not only what is taught became a focus of study, but also why it is taught and how the teaching of mathematics is rooted in pedagogical traditions. This involved participants in deliberations about how to improve the intrinsic qualities expressed in the content of their teaching, as opposed to the traditional emphasis on considering the extrinsic products of schooling. Participants attended not only to theories about teaching and learning, but also to the theoretically-informed practice of teaching. In so doing they produced knowledge about pedagogy which both arose from and was informed by practice.

A third type of understanding described by interviewees was related to the process of change in mathematics classrooms. It is expected that participants in the course will explore what should change, how teachers may go about creating change systematically, and the institutional and social factors which either facilitate, inhibit or influence the direction of change within schools. While some teachers treated the course as a temporary motivation for changed teaching practices, they quickly reverted to more traditional patterns of action after completing the course. Most participants, however, not only saw some possible directions for change in mathematics classrooms, but also developed a realistic awareness of their own ability to implement change within classrooms and schools. Teachers

described clearly the constraints which worked against the implementation of ideas such as cooperative group work, problem solving or the unlimited use of calculators. The possibility of such change within institutions was largely inhibited by traditional social practices, both within schools and in the wider context of societal sub-cultures. Most importantly, true involvement accorded an ownership of the processes of change and development that would seem necessary if professional renewal is to be seen as a self-regulated, self-directed, satisfying and continuing process.

We are only just beginning to understand how cooperative investigations into teaching and learning, initiated through distance education, might be a viable alternative to traditional forms of professional development for teachers. But such action does not sit neatly with the norms of our educational institutions.

Teachers working cooperatively on implementing changes in classrooms is not a traditional form of professional development. In many schools, classroom experiences seem personally unique: teachers work as individuals and professional communication about their experiences is not encouraged. Implicit boundaries between subject areas or grade levels, between administrative and teaching roles, and between the value of theoretical knowledge and experienced-based knowledge further restrict both analysis of everyday practices and the sharing of learning experiences. It has not been common for mathematics teachers to experiment with either curriculum content or pedagogical styles. The 'teacher proof' enforced changes of the 1960s 'New Maths' were accepted with very little resistance, partly because mathematics is one area where curriculum has historically been imposed on both teachers and students. Thus the notion of teachers taking charge of the development of school-based and classroom-based curricula is a relatively strange and unsettling one, often driving teachers to look for the latest textbook set or ministry-produced materials to enable them to feel they are keeping up to date. Rather than there being any critique or institutionalisation of substantive change, adaptations are made to fit existing structures. Such compromises rarely work because of resistance by, and lack of support from, the school community and because they are not driven by change in the fabric of philosophies and understandings of the teachers themselves.

However, our students have found that working in a group of concerned teachers can help overcome some of these problems. Sharing the experience of developing values and teaching behaviours can provide teachers with supportive, critical friends who can explore issues together. Our research indicates that a weakening of the barriers to communication in schools can result from such interaction. There is evidence that students who have worked together whilst completing the course continue to do so, thus ensuring that the climate for collegiate and continuing professional development has been established. The power of 'critical friends' is in evidence here and has been most noticeable with groups of teachers who

have tackled major, rather than tightly focused areas of change. This accords with the findings of McTaggart (1989, p. 1) who stresses that action research is likely to be 'particularly unproductive' unless participants are joined by 'a substantive issue of mutual concern and consequence.'

Reflections

Arising from our experiences with *Mathematics Curricula* is a firm belief that the possibility of groups of teachers engaged in cooperative research about teaching is a viable alternative to the provision of traditional in-service activities. School-based research by teachers seems to have the potential to overcome some of the problems associated with spasmodic, loosely related training programs; and especially those undertaken by isolated off-campus tertiary students. Involving teachers in groups of reflective researcher-practitioners in longer term projects of planning, implementing and evaluating changes according to individual needs, interests, capabilities, teaching styles and contexts of work *does* seem to be a mode of professional development suitable for facilitation through distance education.

We believe that it is up to those who want teachers to be responsive to the changing needs of society to create the supportive conditions whereby they can plan, trial and gradually institutionalise new ways of working. We feel we are making a useful contribution to mathematics education in this way. However, arising from discussions with students and staff during the 1989 evaluation of *Mathematics Curricula*, we have a number of strong reservations about our own role in relation to teachers being pressed into undertaking changes in their mathematics classrooms.

Firstly, not being part of the action research in our students' schools, we are seen as outsiders to the process. Cuban (1989) argues that organisations have protective mechanisms which restrict the influences of 'reformers'. As outsiders to the workplaces of our students, we feel unable to give the close personal support that teachers often require when confronting the norms of schooling, particularly when they are attempting to change the way that core subjects are taught. Altrichter (chapter 9) explains the problems associated with constructing this type of confrontation at a distance in that the practice-oriented research process is founded on intensive peer and teacher-student interaction.

We recognise that we are demanding a lot of teachers in asking them to take an active part in two different social movements. Initially, there is the demand for them to take on responsibility for their own professional development. For teachers raised with 'the pedagogy of the answer', this can be a novel and threatening experience. Simultaneously, we ask teachers to confront established ways of working in classrooms by making changes in

curriculum content and the routine behaviours involved in patterns of teaching and learning. Such demands, even though they are related, involve taking control in a variety of social situations, requiring the learning of new roles; quite an undertaking for busy professionals studying at a distance.

We wonder, too, how much we have been caught up in what can be a meaningless jargon of educational idealism, and what tensions this creates for students who do not have regular opportunities to explore the relevant issues with us. While our agenda is fairly obvious from the course materials, it contains potentially conflicting ideals. Siemon (1987) refers to the difficulty of striving for both equity and excellence, for both access and success; and although we rarely use these words, we are asking students to study their own teaching in a climate where conflicting demands are paramount. A perceived threat to professional competence may be inferred by those required to examine critically their own teaching. We are also aware of potential discord between the social realities of classrooms and disparate realised curricula which recognise and cater for individual children. Yet our sensibility to these problematic aspects of our own curriculum are not made explicit to students - we use these words as if discourse can dictate reality and as if our own work involves few substantive pedagogical problematics. Teachers are not encouraged to explore critically these contradictions in their own learning, yet we expect them to do so in their teaching.

Altrichter, in chapter 9, refers to the teacher-student relationship dilemma where the tutor can act externally to the social situation in which the action research is taking place, but needs to re-enter for assessment purposes. As outsiders to the change process and as people in a position of power, given that we assess students' work and are considered experts in the field of mathematics curriculum, we question whether our role in facilitating change is one of facilitation or imposition. One factor which may affect the ultimate outcome of innovatory practices is likely to be teachers' initial motivation for instituting change. This raises value questions regarding who benefits from pedagogical changes, why and how and by whom decisions are made about changes, and questions of teachers' capacity for implementing and sustaining change given their position in the social hierarchies of schools and society.

Ostensibly, we are committed not to impose directions for change. Externally imposed change in education, says Cuban (1989), has led to a situation where most reforms foundered on the 'rocks of flawed implementation'. Yet our position is not neutral. We are taking part in a social movement that is wider than the re-negotiation of power relations within school communities - the articulation of new social agenda, such as that described by Braudel (1980), where common patterns of authority and decision-making are disturbed. While it may seem obvious to us that change is needed, and that teachers should be responsible for deciding upon the

nature of that change, one wonders at the present and future history of the drive and who will really benefit eventually.

Because of our position of power over course participants, we have recently given consideration to the potentially limiting effects of our input (as well as that of recommended readings and the current trends in mathematics teaching). Even though we encourage students to undertake actions of their own choosing after a wide range of discussion and reading, our input cannot be value free. As Popkewitz (1988) notes, school structures and patterns of operation are not neutral - they are related to the broader social and cultural differentiation of society. Victorian Ministry of Education initiatives, whether based on potential educational, economic, cultural, political or other interests (and these are inextricably entwined), are bound to suggest themselves as desirable ways to move. Our own course materials, the Victorian Ministry of Education's *Frameworks* documents, short in-service courses and the recent planning of Victorian Certificate of Education initiatives all have similar overt agendas. Teachers are continually being assessed and are subjected to influences from both within the school community and in wider arenas. Their own school experiences as children have a powerful influence on recognition of options for teaching behaviours. One could ask how free students are to see alternatives and make uninhibited decisions under these circumstances, or whether their initiatives merely conform to current canons of legitimacy. Thus we are taking part in the maintenance and development of certain forms of legitimacy and certain patterns of social control, necessarily without a full awareness of their effects.

Course evaluation also points to the fact that in facilitating change in classrooms, we are allowing teachers to value the superficial rearrangement of teaching that does not alter the *status quo* of social relationships. Real change, as opposed to symbolic change, involves the understanding of a wider cultural reality and the institutionalisation of innovations at a number of levels and locations. These are not only in the teacher's philosophy, classroom practice, and school practices (administration, curriculum planning, implementation and evaluation etc.), but also in the wider society (parents, secondary and tertiary educators, employers, and governmental personnel). Real change could be initiated at any of these sources; but unless there is general agreement upon basic principles and many commonalities across practices, institutionalisation of change in the teaching of mathematics is not likely to happen.

Tensions can arise from action researchers having differing understandings of the social realities of an institution from those of colleagues and administrators. Action research is a political process because it involves us in making changes that will affect others. Henry and Kemmis point out that 'for this reason, it sometimes creates resistance to change, both in ourselves and others' (1985, p. 3). It also engages people in making critical analyses of the institutional structures in which they work, a situation bound to lead

to tension between action-researchers and those who feel it their duty to protest the status quo. So even if practice does change in the mathematics classroom to some extent, there is no assurance that this will have more than a minimal influence on the wider processes and products of schooling.

Despite the fact that teachers undertake an exploration of their teaching practices by attempting to change some of them, it would be naive to suggest that this will necessarily lead to continuing confidence to make radical innovatory moves in classrooms. Schools are notoriously conservative institutions. Teachers who reflect deeply upon their personal experiences build substantial theories of teaching and learning which then affect their practices. However, these are not likely to be valued fully by colleagues or the wider society because knowledge arising from abstract, literate, objectively-tested fields is often more highly valued than knowledge arising from self-experience. 'Knowledge' objectified through our own schooling and teacher training courses is also likely to outweigh what can too easily be seen as a purely personal, individual understanding of pedagogy.

There is a difficulty in creating intensive collegial and tutor-student discourse through a distance education style of pedagogy. Because of limited contact and consequent inability to probe participants' reasons for decisions made, we are concerned that the classroom changes teachers make are generally of a particular and limited nature. They explore what is taught and how it is taught to a degree, but rarely ask 'why' questions. As Hutchinson and Whitehouse point out:

> action research is not about verification from the given event nor about intelligent action coming from wise judgements arising from the immediate location of the event itself. The whole point of action research is to improve practice on the basis of a dialectical critique of practice, to improve understanding on the basis of a dialectical critique of understanding and to improve the teacher's situation on the basis of a dialectical critique of the situation (1986, pp. 89-90).

Siemon (1989) claims that in confronting the need to achieve fundamental change in school mathematics, there is a tendency to oversimplify the process of change. This is manifested in the claim that the problem is current practice, seen in terms of how mathematics is taught and what mathematics is taught, and that the solution is to expand and improve that practice through more appropriate models of professional development. This results in unquestioned reproduction of the dominant criteria of the *status quo*. Hutchinson and Whitehouse make a similar point:

> Such is the political and economic pressure on us all to regard life and its satisfactions as mere technical matters that appropriate questions about human motives, intentions and reasons for conduct get neglected in favor of taking the immediate situations with its problems and in dealing with them in a technical or instrumental way (1986, p. 89)

Thus, as Siemon says is likely, we have found that areas of change are:

> tightly focused 'small pictures'. There is no guarantee that such images will coalesce to form 'the big picture'. ... The difficulty with reductionism ... is that it is quite possible for teachers to modify their public theories of mathematics education without ever being put into a position of having to challenge, directly and meaningfully, their personal theories of mathematics education (1989, p. 265).

Students tend to make changes at the 'surface layer' - planning, teaching and evaluating a prescribed curriculum - the area described by Popkewitz (1988) as 'the publicly accepted criteria or standards by which people judge success or failure'. But there are few teachers who know, or can tackle, the presuppositions and rules of the game that Popkewitz, says:

> form underlying layers of meaning, (and) give plausibility and legitimacy to the publicly accepted criteria, existing prior to and defining the parameters of any specific new activity (1988, p. 223).

But the teachers do not often see changes made within their limited social realities as superficial. The present move toward co-operative group work, for instance, has been taken up readily in many classrooms, from Prep to Year 12. But many teachers believe that all they need to do is sit children in groups (often decided by teachers according to 'ability' or a variety of other criteria) and have them work together on solving teacher-directed mathematical problems. There is little critique of present practices involved in such a superficial change, which can actually decrease the amount of mathematical thinking some pupils undertake. The teachers do not have to delve into their personal theories of, or experiences with, cooperation or problem solving. They do not necessarily confront the nature of their direction and the hidden messages it portrays, or make the values inherent in the problems being solved specific or problematical. Questions about the real purposes of the change are rarely asked. Many teachers, for instance, would be shocked by Pitman's (1989) assertion that the Australian problem solving movement of the 1980s follows from an important element of the U.S.A.'s national strategy to achieve a more efficient economy, rather than from a concern for better understanding of mathematics.

Cuban (1989) refers to the limitations of teachers fully comprehending, or tinkering with, the existing system. He delineates between what he calls first-order and second-order changes; and suggests that lack of real change, as opposed to superficial reform, is the result of the large majority of changes being only of the first order. First order changes, aimed at providing solutions to problems and making what already exists effective and efficient, fail to disturb established pedagogical structures. Second-order changes, on the other hand, confront basic design and organisation of schools, aiming to transform fundamental roles and ways of working. It seems clear, if this is the case, that students should be attending to the

basic fabric of schooling if we are to expect institutionalisation of change.

One wonders what further actions we could take to have students (and ourselves!) become more aware of the social histories and ramifications of educational innovations. This would need to involve a further 'standing off' from day-to-day practices in teaching in order to see them in the wider field of socially-constructed and culturally-based interactions. Hutchinson and Whitehouse make the point that:

> teachers who start on the road to action research can be critical of the classroom practice but cannot make a critique of it. In order to do so they have to commit themselves to a shift away from regarding immediate social experience as the given 'natural' state of affairs, to an awareness that it is a human construction capable of being changed (1986, p. 89).

But most teachers feel they are not in a position to affect the organisation of the school or other educational bodies. In fact, the process of action research does not sit easily with the hierarchical power relationships in schools. Our work is an attempt to break down hierarchical order and the teacher isolation which contributes to the resistance of teachers to criticism, change and improvement. But Hutchinson and Whitehouse describe the dichotomous polar tendencies between action research and educational institutions which create dialectical tensions:

> While action research fosters collegiality, informality, openness and collaboration, action researchers have to contend with educational institutions that are structured hierarchically with formal asymmetrical relations of power and responsibility (1986, p. 85).

In a climate where questioning of educational traditions is not encouraged and teachers are expected to be relatively conforming to the norms of institutions, groups of teachers working together to change hegemonic systems can be seen to be undermining established decision-making structures and practices. Hutchinson and Whitehouse assert that it is not more democratic relationships between teachers that pose a threat to institutional organisation, but:

> the consequences of such collaboration arising from a critique of teaching and learning, of curriculum provision, of treatment of pupils and the purposes of education, that threaten to subvert the social reality (1986, p. 85).

As these authors add that professional competence, the exercise of power, and resistance to change are inextricably interwoven.

Given these constraints, it is easy for teachers, and particularly the inexperienced practitioners, to justify only small foci of change. In fact, we encourage this in that our course materials urge students to 'start small'. While this advice seems sensible, we are concerned that our students are

therefore all too ready to take on a form of superficial change that precludes the need for a deeper and wider examination of school and classroom organisation and curriculum. Change in such a situation becomes an illusionary force for retention of the *status quo*, a consoling belief for teachers, administrators and parents that something is being done. It is all too easy for teachers to think, for instance, classroom situations have improved if 'the children are now working well in groups', but few actually tackle the question of whether their pupils are learning more. But because teachers *believe* that they are changing practice in taking up current trends, and Ministry literature encourages this belief, they are unlikely to seek more rigorous and critically aware forms of professional development. Social issues regarding the pedagogy of mathematics remain unexamined as essentially unchanged practices are legitimated through yet another 'new' mathematics. As Popkewitz claims (1977), historical, social and personal dimensions are lost in curriculum design.

As in some other Deakin University School of Education courses, the staff feel that they do not have enough time with students to support them through what must be, if it is to be truly useful, a major examination of their own practices followed by reconstruction of ways of working. We aim only to give them a taste of what is possible: to have teachers use, support and develop their capacities of professional reflective action for a period of one school year. But it is obvious that this is often not enough for them to feel the true potential of teacher-led professional development. Naisbitt (1984) contends that a paradigm shift is a 'lurching dynamic over time', but all teachers (including our course teams) are denied this time by multi-dimensional, often conflicting, occupational and personal demands.

Perhaps our most serious reservation, in expecting teachers to learn about pedagogy through attempting to change it, is summarised by McTaggart's claim that it is necessary not just to create 'opportunities', but to confront and overhaul the social systems in which those opportunities are defined:

> Opportunities are not enough, the hegemony of existing systems must be confronted so that practices which consistently undermine teachers' claims to knowledge about their work are replaced by patterns of social relationships which increase the primacy of those claims (1989, p. 2).

Henry and Kemmis believe that action research provides a legitimate basis for teachers sharing their professional understandings with colleagues, claiming it:

> allows us to give a reasoned justification of our educational work to others because we can show how the evidence we have gathered and the critical reflection we have done have helped us to create a developed, tested, and critically examined rationale for what we are doing (1985, p. 3).

It seems that by encouraging teachers to form their own collegial support groups in order to undertake collective research, we can facilitate a growth of understanding about teaching practices. Perhaps the next step, then, is to have our students use more public opportunities for reporting to the wider professional community the common understandings developed through collaborative reflection, As distance educators, removed from the reality of school settings, we need to clarify how we can further assist groups of teachers to adopt key roles in educational change.

Chapter 13

Culture, curriculum and mathematics distance education

Nerida F. Ellerton and M.A. (Ken) Clements

Mathematics distance education: assumptions

MANY PEOPLE ASSUME that the discipline of mathematics is more or less culture free, and that there is no good reason why the content of tertiary mathematics and the methods by which it is taught should vary significantly from country to country. It is also commonly assumed that the ability to acquire scientific and technological skills is dependent on having an adequate grounding in mathematics (Briggs, 1987, p. 27), and that more widespread use of distance teaching might be an appropriate way of addressing the problem of the worldwide scarcity of qualified mathematics teachers in schools and universities (Briggs, 1987, p. 26). Furthermore, the idea that good quality distance tertiary mathematics materials prepared in one country can readily be used in another country, with only a few changes, is widely accepted (Ellerton and Clements, 1989a, p. 4).

The purpose of the present paper is to examine critically the above assumptions, and to present the findings of an investigation, carried out by the writers, into (a) the extent to which practising tertiary mathematicians believe that mathematics is a culture-free discipline; and (b) the implications this might have for the teaching and learning of tertiary mathematics by distance methods.

W should say that this chapter is timely because there are large numbers of post-secondary institutions around the world that offer distance courses in mathematics. A recent summary report on *Commonwealth Co-operation in Open Learning*, prepared by Coffey, Hubbard, Humphries, Jenkins and Yates (1988) for the Commonwealth Secretariat, indicated that, of 306 institutions which responded to a questionnaire, 114 (i.e. 37%) said that they offered distance teaching of mathematics; economics/business studies (120 institutions, i.e. 39% of respondents) was the only subject area which was offered, in the distance mode, by more institutions.

While it is tempting to suggest that the popularity of the distance mode for the teaching of mathematics is because it is particularly effective with mathematics, in fact we are not aware of research evidence to support this conclusion. It is more likely that the widespread use of distance education is because: (a) distance education methods are most commonly used with

adult learners (Coffey et al., 1988, p.11), and many adults feel the need to improve their mathematical knowledge and qualifications; and (b) across the world there is a serious shortage of personnel qualified to take up employment requiring scientific and technological skills.

Alan Bishop (1988) has maintained that the teaching of mathematics should always take full account of local cultural influences, both on what constitutes the nature of mathematics and on how mathematics is learnt. If his argument is correct, then the implementation of mathematics courses taught at a distance, using curriculum materials developed by institutions set in different cultures, is likely to be problematic and should only be attempted after due consideration of the likely implications. The pertinence of Bishop's argument is underlined by a report in 1988 on the activities of the Commonwealth Association of Science, Technology and Mathematics Educators (CASTME). According to this report:

> CASTME facilitates the exchange of information among science, mathematics and technology (STM) educators, keeping in mind the great diversity of cultures, customs and technologies across Commonwealth countries. It is particularly concerned with the social implications of STM education. These include the relevance of STM curricula to local needs and conditions, and to the impact of technology, industry and agriculture on a local community (*Commonwealth Education News*, July, 1988).

Despite these sentiments, a paper prepared for the first Board meeting of the Commonwealth of Learning pointed to the fact that many developing countries are particularly short of scientists, technologists and engineers, and argued that there are distance-teaching materials already in existence that can be used to provide effective education and training in science and engineering (Commonwealth of Learning, 1988, p.2). Similar arguments can be, and in fact are being, applied in the area of mathematics education.

Research into mathematics distance education in commonwealth post-secondary institutions

In 1988, we were invited by the Commonwealth Secretariat in London to undertake a study of distance teaching of mathematics in Commonwealth post-secondary institutions, and to produce a report which addressed the following four questions:

1 Are there needs in the teaching of mathematics at the post-secondary level which are common across a variety of Commonwealth countries?

2 To what extent are approaches to the teaching of mathematics and to curriculum development in mathematics suffi-

ciently similar in different Commonwealth countries to permit or encourage the sharing of materials?

3 Which already existing mathematics materials could be made available for wider distribution?

4 What kind of difficulties have been encountered by distance-teaching institutions in the teaching of mathematics?

We added a fifth question to our agenda:

5 To what extent is the discipline of mathematics a culture-free phenomenon?

It seemed to us that the culture-free question needed to be addressed before the other four were considered. While most of the data reported in this paper relates specifically to the fifth question, our overall report provided analyses of the data pertinent to all five questions and made eight recommendations on methods for raising the quality of the distance teaching of mathematics in tertiary institutions (Ellerton and Clements, 1989a).

We decided that there should be four main components to the study: (a) the development of a questionnaire, and the distribution of this to mathematics departments in all universities in Commonwealth countries; (b) the compilation, from questionnaire responses, of data pertaining to mathematics courses taken at both senior secondary and first-year university levels in various Commonwealth countries; (c) the interviewing of a sample of those involved in the administration and teaching of mathematics at a range of Commonwealth institutions; and (d) the preparation of a report, for the Commonwealth of Learning, on the application of distance education principles to the teaching and learning of tertiary mathematics.

Data pertinent to the culture-free issue were obtained by analysing: (a) responses to pertinent items on the questionnaire; and (b) transcripts of interviews with those involved in the administration and teaching of tertiary mathematics. Before these data are presented and discussed, it will be useful to present some mathematical, philosophical and historical considerations which bear on the issue of whether mathematics is culture free, and whether the teaching, in various countries, of tertiary mathematics at a distance can realistically be based on more or less the same materials, prepared in one country.

Some mathematical, philosophical and historical perspectives

For Ludwig Wittgenstein, the Austrian/English philosopher, mathematics was not something entirely independent of reality, and no statement was true *a priori*. For him, Western mathematics was a product of history, of

social transmission processes at work, and had been more or less shaped by a 'survival of the fittest' evolutionary notion. Forms of mathematics that were accepted, developed, and used by a powerful group were passed on, not only to children in the group, but also to other groups. When a new kind of problem arose, an extension of existing mathematical knowledge was called for, in order that a solution might be obtained; this, in its turn, was socially transmitted, and came to be recognised as 'mathematical truth' (Del Campo and Clements, 1990, p. 52). So, reducing Wittgenstein's thesis to its simplest form, although physical reality and our biological dispositions impose constraints on the conventions we develop and include within what we call mathematics, there is no mathematical reality that guarantees the results we get (Wittgenstein, 1956, p. 190).

The idea of mathematics as a socially constructed body of knowledge has increasingly gained credibility in twentieth century philosophy (Lakoff, 1987, p. 354). After David Hilbert, Bertrand Russell and others had, early this century, attempted to lay the foundations of mathematics solidly as a formal system, where all truths could be proved and only truths proved (see Russell, 1974), this formalist philosophy of mathematics was shown to be unattainable by Kurt Gödel in 1934. Gödel proved that even within such a basic structure as first order predicate calculus, together with axioms sufficient to model fully the natural numbers, there are statements which cannot be proved, even though they were constructed so that they are true (see Rucker, 1982 for detailed comments on Gödel's celebrated theorem). This revelation led to a deep questioning of the nature of mathematics: Gödel, himself a dedicated Platonist, was quoted as saying that either 'mathematics is too big for the human mind, or the human mind is more than a machine.' In a similar vein, Herrman Weyl is reputed to have said: 'God exists because mathematics is undoubtedly consistent and the devil exists because we cannot prove the consistency' (quoted in Herlihy, 1986, p. 15). Other statements such as 'mathematics is the only branch of theology that has a proof that it is a branch of theology' were made, and the embarrassment among mathematicians is reflected by the following comment by Morris Kline

> Many mathematicians would perhaps prefer to limit the disclosure of the present status of mathematics to members of the family. To air these troubles in public may appear to be in bad taste, as bad as airing one's marital difficulties. But intellectually oriented people must be fully aware of the powers of the tools at their disposal. Recognition of the limitations, as well as the capabilities, of reason is far more beneficial than blind trust, which can lead to false ideologies and even to destruction (1980, preface).

Such views are in keeping with the recognition that Gödel's results dealt formalism a death blow. In 1930, shortly before Gödel announced his results, Hilbert, when giving a lecture on the nature of human reason, had electrified his audience by exclaiming 'We must know! We must know!' Absolute knowledge was the goal of the Hilbertian formalist school. But

soon after Gödel 'dropped an atom bomb on mathematical foundations' (Nickel, 1985), Herrman Weyl was led to say that while 'the question of the ultimate meaning of mathematics remains open, we do not know in what direction it will find its final solution, nor even whether a final objective answer can be expected at all' (quoted in Kline, 1979, p. 1207). Wittgenstein, a contemporary of Gödel, after commenting that 'there is no religious denomination in which the metaphysical expression has been responsible for so much sin as it has in mathematics' (quoted in Shanker, 1987, p. vii) went on to say that he believed the twentieth century would witness a rejection of the logic of Leibniz, Gottlob Frege, and Bertrand Russell.

Wittgenstein was right. Karl Popper's fallibilist philosophies followed, suggesting that a scientific theory can never be proved, only refuted. And these ideas were taken up in mathematics by Imré Lakatos (1976) who described a long history of disputes within mathematics about the properties of polyhedra, and argued that many mathematicians, in defending the view that mathematics is a form of absolute knowledge, have defined and redefined the term polyhedron to fit their goals. In this sense, as Wittgenstein noted, mathematics became a language game used to prop up the myth that in some genuine sense it is *a priori*, standing apart from other relative states of knowledge (Rizvi, 1988; Watson, 1989).

In the 1980s it became commonplace for philosophers of science and education to view the characteristic thinking patterns of mathematicians as not fundamentally different from human thought as embedded in other domains. Indeed, mathematics was no longer seen as involving the discovery of truths existing outside the realm of human activity, but rather as domain-specific, context-bound, and as procedurally rooted as any other form of knowledge. Thus, mathematics educators, and especially those identified with constructivist ideas, tended to label the Platonist notion that 'mathematical objects somehow exist independently of human experience' as a common misconception, although it was still recognised that a body of mathematical knowledge accumulated 'over the years, a body of knowledge that can be found in books, in journals, and in the exchanges in the many different communities of mathematicians' exists (Bergeron and Herscovics, 1990, p. 125).

The internationally accepted body of knowledge that is the domain of professional mathematicians was termed 'Mathematics'(with a capital M) by Bishop (1988, pp. 56-57), who added that in using such a term he does not mean to imply that there is just *one* mathematics. For Bishop there are many different mathematics (with a small m), such as 'Chinese mathematics, Greek mathematics, Roman mathematics, African mathematics, Islamic mathematics, Indian mathematics and Neolithic mathematics' (Bishop, 1988, p. 56). For Bishop, although the term Mathematics (capital M) is an internationalised discipline it is nonetheless a specific line of knowledge development that has been cultivated by certain culture groups until it has

reached the particular form that we know today. As Stillwell has stated: 'Probably ninety-nine percent of mathematicians are now in agreement over what is a number, what is a function, etc, and there is a similar consensus over what has and what has not been proved' (1988, p. 6).

In the sense that different cultures will have different forms of 'small-m' mathematics, it should be expected that mathematics learning should not be uniquely immune to the influence of culture, but rather it ought to be as culturally bound as learning in any other domain (Stigler and Baranes, 1988, p. 258). These ideas have been picked up by educational philosophers such as Evers and Walker (1983) who have argued that since mathematical knowledge is but one aspect of a seamless web of knowledge, mathematics should not be taught as if it is an 'out-there,' objective form of knowledge. Yet, despite these relativist notions of mathematics, for most curriculum developers the image of mathematics is still one of being at the pinnacle of human reason. For them, mathematical curricula should be hierarchical in nature, and mathematics teachers should stress the need for students to learn basic mathematical facts and skills, and to make correctly sequenced verbal and written statements (Ellerton and Clements, 1990).

Culture and mathematics learning

In most parts of the world, the locally constructed versions of mathematics and the internationally recognised formal Mathematics impinge on the thinking of individuals. For example, the system of Hindu-Arabic numerals is used throughout most parts of the world, especially in schools, and facilitates a level of commonality across cultures in mathematical knowledge (Stigler and Baranes, 1988, p. 259). Be that as it may, the Mathematical skills that children learn in schools are not so much logically constructed on the basis of abstract cognitive structures, but rather are forged out of a combination of previously acquired or culturally inherited knowledge and skills, and new cultural input. Thus culture-specific mathematical representations influence the development of Mathematical knowledge and, psychologically, at least, become part and parcel of that knowledge (Watson, 1987).

There is a real danger that such is the power and prestige of Mathematics that, around the world, society tries to foist it on unsuspecting school children of whom many are not ready, both from the cultural and cognitive points of view, for what they are being asked to learn. This tends to create so-called 'minority' students who are regarded as 'disadvantaged' (Secada, 1988, pp. 48-49). Mathematics education research is pointing to the conclusion that, in all countries, discourse in mathematics classrooms serves to bolster false claims, to perpetuate myths about what is true and what is false, and to preserve racial, gendered, and social inequalities (Brown, Collins and Duguid, 1989; McBride, 1989; Mellin-Olsen, 1987;

Perkins and Salomon, 1989; Popkewitz, 1988; Secada, 1988; Walkerdine, 1988; Wheatley and Bebout, 1990).

It is even being claimed that the net effect of up to ten to twelve years of mathematics instruction is to convince most school leavers that they cannot do Mathematics (Ellerton and Clements, 1989b, p. vii). Mathematics is being presented in schools as if it is a form of external, objective, knowledge that 'bright' students will acquire if they apply themselves diligently. It is accepted as part of the culture of schooling that 'other,' not-so-bright students will gradually fall by the wayside, mathematically speaking, although hopefully, these will have acquired enough of the powerful 'objective' knowledge to be able to survive with dignity in their society. Yet for many learners there can be no doubt that attempts to root 'tomorrow's knowledge in the knowledge of yesteryear' (Mellin-Olsen, 1987, p. 131) have been inadequate.

One is reminded of Paulo Fréire's words: 'Propoganda, slogans, myths are the instruments employed by the invader to achieve his objectives: to persuade those invaded that they must be the objects of his action, tha. they must be the docile prisoners of his conquest'. He added that 'it is encumbent on the invader to destroy the character of the culture which has been invaded, nullify its form, and replace it with the by-products of the invading culture,' and argued for the establishment of dialogue which avoids cultural invasion, and dialogical manipulation or conquest (1985, p. 114). Mathematics educators need to consider, carefully, the extent to which current practices and assumptions in school mathematics constitute, for many pupils, an invasion of culture. In a nation like Papua New Guinea, for example, with many of its 750 or so indigenous counting systems still surviving in the villages (Lean, 1985-1989), a real tension has been created by the introduction in the Community Schools of a form of Mathematics that simply does not fit. It is true that the school systems in such countries produce a small number of education survivors who proceed to higher educational studies. But, meanwhile, what has the education system done for the vast majority who exit from mathematical study believing not only that they cannot do the subject, but also that they never will be able to do it (Clements and Jones, 1983)?

Colonialism and school mathematics

The history of mathematics education in Commonwealth countries suggests that there was always a tendency among educators in the colonies to mimic what was happening in school mathematics in England (Clements, Grimison and Ellerton, 1989, pp. 50-78). For example, those attempting to explain why the payment-by-results system (Dear, 1975) was introduced into the Australian colonies in the 1860s need not look far beyond the fact that the system was introduced in England just previously - it should also

be observed that the same system was adopted later in the nineteenth century in many British Commonwealth colonies including India, Ceylon, East Africa and Malaya (Watson, 1982, p. 10).

Clearly, a form of colonialism has been shaping the curricula, assessment policies and indeed the perceived *raison d'etre* of school mathematics in many countries around the world. Such thinking should not be thought of as having been confined to countries politically regarded as colonies, or to the nineteenth or early twentieth century: rather, it has been and continues to be evident in the relationship between many developing countries and so-called 'advanced' nations, such as the USA, the UK, and the USSR. It can be argued that despite the best intentions of all concerned, the employment of mathematics education consultants from 'advanced' countries, by UNESCO, the World Bank, and other similar organisations, for the purpose of advising on mathematics curricula in developing countries has nurtured, developed and maintained colonialist attitudes and policies in school mathematics. So, for instance, after the 'New Math(s)' was introduced in the United States and the UK, in the late 1950s and 1960s, it was inevitable that versions would subsequently be introduced in many other countries, despite the fact that it was meeting with only limited success in those original countries (Moon, 1986).

Considerations such as these led Clements and others (1989) to deplore the tendency among Australian mathematics educators to mimic developments in school mathematics in England. This tendency was apparent even in the 1980s, when the Cockcroft Report (Cockcroft, 1982) and national assessment and curriculum ideas emanating from the UK had a major impact on the thinking of educators in all Australian states. Clements and others (1989) attributed this tendency, in Australia and elsewhere, to what they called the 'colonialist' forces operating among those who seek to define the practices and scope of school mathematics in many countries. They defined 'colonialism' as 'an attitude of mind accepted by both the leaders and representatives of the colonising power and by those who are colonised, that what goes on 'at home' should also take place in the colonies,' and added that while this acceptance is sometimes a conscious act, 'more often it is unconscious - people behave in a colonialist way simply because that is the way they have learnt to behave' (Clements and others, 1989, p. 72).

According to Clements et al. (1989, p. 72), one of the most important factors that has contributed to the development and maintenance of colonialist thinking in mathematics education has been the largely unthinking acceptance of the idea that mathematics is a culture-free discipline; that is to say, it has been assumed that mathematics is, and should be, the same wherever it is studied. This kind of thinking has been particularly evident among those responsible for maintaining an overview of educational policy in different countries. For example, Briggs (1987), in a report to the Commonwealth Secretariat in London, stated that it is arguable that

mathematics might be particularly suitable to Commonwealth cooperation because 'there is no practical requirement and the cultural dependence is less than with other subjects' (Briggs, 1987, p. 27).

Such notions fly in the face of the main thrust of the UNESCO Report prepared by Damerow, Dunkley, Nebres, and Werry (1984), in which the culture-free idea of mathematics is specifically repudiated. Historically, mathematics curricula were developed for an élite group of students who were expected to continue their mathematical and scientific studies in tertiary institutions (see also Ellerton and Clements, 1988). But with more and more children attending schools on a regular basis, students from less selective backgrounds, and with different vocational aspirations and daily life requirements, have entered the education systems in greater numbers. These students have often found existing mathematics curricula to be unduly abstract, impractical, and irrelevant.

This UNESCO Report laments the fact that the old élitist curricula have frequently been transferred to developing and third-world countries, where different social and cultural traditions have often emphasised their inappropriateness (Damerow et al., 1984, p.4). There is increasingly strong evidence that children in non-Western cultures, for example, often have different ways of thinking about measurement concepts, and about numerical and spatial relationships (Clements and Del Campo, 1990; Harris, 1990; Hunting and Sharpley, 1988; Wheatley and Bebout, 1990). Mellin-Olsen (1987, pp. 128-129) asked his readers to consider what would happen in mathematics education if it were not infiltrated by European educationists and publishers. He stated:

> To sort out all the possibilities this nation confronts, let us merely consider two marginal cases:
>
> A it can stick to its traditions and original culture, and base its production on farming and scattered population.
>
> B it can aim at industry and technology in order to obtain the material standards set by Western measures.
>
> So what then about the choice of curriculum? Is it in the hands of the academics or not? Is it the psychologist or the anthropologist who really makes the decisions if their advice is followed? Whether yes or no the result is a political result. (p. 129)

Mellin-Olsen went on to argue that such curriculum decisions should not be made by 'expert' outsiders, but by the people themselves, for 'it is really their decision, and this decision is related to a much wider context than that embedded in the walls of the educational institution: it is related to the context of society' (p. 129).

National curriculum considerations

Mellin-Olsen's argument raises the thorny issue of the extent to which curriculum decision-making processes should be decentralised. And this issue is not confined to third- and fourth-world cultures, for as Mellin-Olsen (1987, p. 123) argues, such matters 'are more relevant for Western classrooms than we tend to like.' The notion of an international mathematics curriculum is now being earnestly discussed in the literature (Oldham, 1989), and in recent times we have witnessed the introduction of national curricula in the UK (Noss, 1989). The development, by mathematics educators, of a major standards document in the USA (Crosswhite, Dossey, and Frye, 1989; National Council of Teachers of Mathematics Commission on Standards for School Mathematics, 1989), and strong moves for the adoption of a detailed document setting out principles and mathematics entitlements for compulsory and post-compulsory education levels in Australia (Baxter and Brinkworth, 1989), reflect this same trend towards standardisation of mathematics curricula.

It is intriguing that moves towards a national curriculum in Australia follow hard upon similar moves in the UK and the USA. The arguments that moved the politicians in 1901, when the Australian colonies were federated into one nation, to make the organisation of education the responsibility of the various *state* governments, and *not* the federal government, would appear to have been abandoned. Just as, in the 1960s, each Australian state moved quickly to incorporate the ideas of the 'New Math(s)' into its school mathematics programs, the notions of national curriculum and assessment are now being imported from abroad. One can be forgiven for thinking that once again colonialist thinking has reared its ugly head in the context of Australian education, for the arguments now being advanced for a national mathematics curriculum would appear to be no more valid, or persuasive, than were arguments offered in support of the 'New Math(s)', 'Cuisenaire rods,' and other large-scale but ill-fated mathematics curriculum changes that were imported at various times throughout this century.

The relevance of the national curriculum issue to this paper, that is primarily concerned with identifying underlying principles associated with the distance teaching of tertiary mathematics, is that similar arguments are used by those supporting the notion of national curriculum and those who believe that quality materials developed in one country for the purpose of teaching tertiary mathematics at a distance are likely to be extremely useful for the same purpose in virtually any other country. Typically, advocates of either or both of these notions attempt to justify their views by referring to global, high-sounding 'statements of principle' that contain phrases that few would want to contradict: in particular, they claim that there are certain basic mathematical understandings, knowledge and skills that all students should acquire, and certain opportunities and learning experiences that they should have.

Thus, the draft version of *Mathematics for Australian Schools* points to the rapidly changing world of technology, science and mathematics, and suggests that a national statement produced by some combination of experts, and after due consultation with relevant groups, should serve the useful purpose of providing a foundation for mathematics courses that will meet students' present and future needs. And, in a similar vein, Swift (1986) in some notes prepared for the Commonwealth Secretariat in 1986, stated, in a section entitled 'Foreign teaching material and cultural appropriateness,' that there is virtually no danger of straight science, mathematics, or technology courses, which have been developed in one country being culturally offensive in another. Swift maintained that 'in these fields particularly, one would argue that it is grossly wasteful to think in terms of preparing course material that has already been well-prepared at immense expense.'

The folly of trying to impose fairly common mathematics courses on students at any level, and from different cultures, has become increasingly evident. Such attempts inevitably result in learners from major groups (like, for example, women, the working classes, and ethnic and racial groups) being disadvantaged, yet this happens in a social climate aiming to achieve 'equality of educational opportunity ' (Clements, 1989).

This point was amplified by data obtained in the large-scale investigation into the literacy and numeracy skills of Australians aged 10 and 14 years carried out by the Australian Council for Educational Research (ACER) in 1975. The large sample for this study included subsamples of tribal Aborigines, mainly from the Northern Territory, and urban Aborigines from different parts of Australia. The urban Aborigines performed significantly less well on the numeration tests when compared with white children of the same age, and the tribal Aboriginal children showed next to no understanding of the written tasks. Bourke and Parkin (1977), in reporting these findings, concluded that the questions on the literacy and numeracy tests involved ideas that were largely foreign to the tribal Aboriginal children's cultures, a point emphasised by Harris (1987, 1989, 1990) and Watson (1988, 1989). Of course, such a conclusion came as no surprise to tribal Aborigines and to those with an empathy for Aboriginal cultures.

One example from this ACER study will serve to illustrate the point we are making. Both the ten and fourteen year old students who were tested were asked to write down the time shown on a watch-face: the watch used for the younger students had Arabic numerals on its face, but that used for the older students had only strokes. The times shown were 11:35 and 4:40 for the ten and fourteen year olds, respectively, and results obtained are set out in Table 13.1. Bourke and Parkin (1977, p. 149), in commenting on the very small percentage of tribal Aboriginal respondents who gave co..ect answers to these time questions, stated that the tasks themselves were 'certainly outside the experience of many.'

Table 13.1 Performance on time-telling tasks by three groups of students

	Correct Responses (%)		
Age group	Tribal Aboriginal children	Urban Aboriginal children	Australia overall
10 year-olds	2	25	71
14 year-olds	3	73	89

Harris's (1990) recent report on Aboriginal time concepts lends strong support to the view that what is regarded as 'basic' in one culture can be irrelevant in another. It follows that the very existence of a national curriculum (or indeed international distance education materials) is likely to ensure that teachers will waste much time trying to help unprepared and increasingly disaffected students acquire skills that although described as 'basic' are, for these learners, almost meaningless.

The research project

In September, 1988, we sent the questionnaire that we had developed to the heads of mathematics departments at all 351 universities listed in the *Commonwealth Universities Yearbook 1987*. The questionnaire was also sent to 68 tertiary colleges in Australia and to 25 British tertiary institutions listed in the handbook *University Entrance 1988*, but not in the *Commonwealth Universities Yearbook 1987*.

Altogether 444 questionnaires were posted and of these, 107 were completed and returned. Despite the relatively low response rate, it is interesting that completed questionnaires were received from institutions on all six continents. Thirty-seven were received from Australian universities and colleges, thirty from the UK, twelve from Canada, five from India, four from New Zealand, three from each of the West Indies and Nigeria, two from each of Bangladesh and Papua New Guinea, and one from each of Guyana, Hong Kong, Kenya, Lesotho, Malaysia, Malta, Sri Lanka, Swaziland and Tanzania (Ellerton and Clements, 1989a, p. 6).

Culture and Mathematics

Of all the questions, the one which drew the richest answers was: 'Do you think that mathematics is culture-free: that is to say, do you think that mathematics is the same the world over?' Fifty-eight of the respondents replied in the affirmative, 33 in the negative, and 16 indicated that they

were 'undecided.' Some of the most interesting comments have been grouped into six categories, and are reproduced below.

1 Mathematics *is* culture free:

'There is only one kind of mathematics.'

'I think mathematics is the same the world over because it is more or less an exact science.'

'Mathematics is a universal discipline which deals with abstracts.'

'Probably the most culture free of all subjects.'

'Mathematics is independent of culture. The problems set for students may reflect local cultures, but the mathematics is not thereby changed.'

'Yes: The *content* of mathematics courses at tertiary level for the natural sciences, engineering, etc., have become standardised to a reasonably high degree.'

'More or less.'

'If it isn't it should be.'

'Basically, yes.'

2 Mathematics is *almost* culture free:

'Ideally, yes; in practice, no.'

'At least more so than other disciplines.'

'There is a universality about mathematics as a means of communication of ideas. However, the following seem to be culture dependent: (a) the ways in which mathematics should be taught and learned; (b) the types of problems tackled by mathematical methods; and (c) the research and teaching priorities of mathematics.'

'Although the basic theory is culture-free, examples, problems and applications may depend on the culture and also on the availability of literature and computer hardware and software.'

'Basically yes, though different countries choose different balances between theoretical work and problem solving, between rote learning of techniques and understanding, between pure and applied maths, etc.'

'Almost. Examples can reflect local conditions and/or can be irrelevant. For example, most Newfoundland students have never seen a farm Examples on quantities of wheat per acre are irrelevant here.'

'Yes, more than any other university subject. But 'no' in that the educational background and work ethic of the culture can make math (taught in the standard way) unexciting and impossible to overcome in secondary school.'

'Even though common applications may vary in the social environment across the world, the mathematics itself is invariant (surely?).'

'Maths is probably the least dependent on culture, of all fields

of study, but it is not completely culture free. To teach and learn maths we need examples, images and other audio-visual aids which are related to language and culture.'

3 The answer depends on the level at which mathematics is being studied:

'At school level, discussion of practical problems must relate to the student's environment, and so will not be culture-free. Abstract mathematics is culture-free; applied mathematics and statistics at higher levels are culture-free in most cases.'
'The cultural nature of mathematics is stronger at lower levels. However, even at university level there are cultural differences which would make transferring teaching materials from one country to another difficult.'
'A silly question until you specify age levels and mathematics levels. What *is* clear is that the *teaching* of mathematics is both *culture* and *educational system* dependent. This applies even within Australia.'
'For young children the answer is obviously no.'

4 Curriculum and culture:

'Maths, yes; maths education, no. The way maths is taught and society's attitude towards maths is a function of culture.'
'One of the basic understandings in the area of curriculum development is that culture is a major influence on curriculum - whether it be social studies or mathematics.'
'No: see Bishop's *Mathematical Enculturation* (although I'm probably a closet Platonist).'

5 The meaning of 'mathematics' in the question 'Is mathematics culture free?':

'Yes, but this could just be a question of the definition of mathematics.'
'Not a good question - I believe the binomial theorem to be culture-free. Do you mean should the curriculum reflect the culture; should teaching methods, examples, ... ? If the latter, then my answer would be "yes".'
'I am not quite sure what the question means, for the validity of a theorem does not depend on the part of the world in which it is enunciated. On the other hand, particular countries may find certain areas of mathematics more relevant to their needs than others. Again, national tradition can influence the choice of material for a university course and the approach that is adopted.'

6 The effect of context on mathematics:

'The teaching of mathematics is certainly not culture-free - mathematics is a very different subject for even Scottish students of mathematics and mechanical engineering.'
'Different countries give different emphases. For example, in

Italy, combinatorial theory seems restricted to geometry because of its historical development.'
'Mathematics is the same but its context is not. Different areas are emphasised for different cultures. For example, geometrical intuition/argument is much stronger in some Eastern bloc countries. Even between disciplines, the 'engineering mathematics' approach differs from the 'pure mathematics' approach.'
'It is same and should be same, but in the case of Papua New Guinea, there is a difference....Some PNG concepts are in direct confrontation with Western concepts.
'Some maths is clearly of more immediate practical use than the rest. Poor countries shouldn't waste time on obtuse mathematics in my view.'
'The answer is both yes and no. The essence of mathematics is, no doubt culture-free. On the other hand it is my experience that arithmetic is very much ingrained in the culture of the Indian sub-continent; for I have witnessed many illiterate people who were highly proficient in arithmetic.'
'Generally it appears that mathematics is culture-free. Language may hinder the learning of mathematics with respect to problem solving or modelling. Maybe certain peoples, such as the Australian Aborigines, may experience extra difficulties if their culture and language is not number based.'
'Language is an important component of mathematics and therefore its structure and cultural difference will have some influence.
'The development of mathematics has often been influenced by social, economic and cultural pressures. The needs of one society could be almost irrelevant in another - however, there are pressures that produce a certain commonality.'
'Of course not. What we teach has grown from a Western culture. It connects at points with other cultures who have emphasised similar studies, but we overlook the differences at our peril.'
'I don't know. (I have only studied mathematics in a first-world, Western context.)'
'I believe that mathematics is extremely culturally laden - its content and instruction are inextricably linked to our Western culture.'

Of the 33 negative responses ('Mathematics is not culture-free'), 17 came from Australia, but, somewhat intriguingly, only 2 negative responses (out of a total of 24 responses) came from Bangladesh, Guyana, Hong Kong, Kenya, Lesotho, Malaysia, Malta, Nigeria, Papua New Guinea, Sri Lanka, Swaziland, Tanzania, and the West Indies.

Mathematics as pan-cultural phenomena

As some of the comments quoted above suggest, the answer to the question of whether mathematics is culture free depends critically on how 'mathematics' is defined. Does the 'mathematics' practised by 'mathematicians' in universities around the world define, totally, the scope and essence of mathematics? As previously noted, Alan Bishop (1988, pp.18-19) has argued persuasively against such a point of view. For him, mathematics is a pan-cultural phenomenon, something which exists in *all* cultures; and 'Western Mathematics' (which he calls Mathematics with a capital M), is a particular variant of mathematics which has been developed through the ages by various societies. If Bishop's ideas are to be taken seriously, then mathematics educators at all levels, including the tertiary level, must take a more anthropological view of the nature of mathematics.

Implicit in all of the respondents' comments quoted above is the tension between the notion of mathematics as a pan-cultural phenomenon and Mathematics as a discipline currently practised by mathematicians in universities. Those comments which suggest that at the early primary school level mathematics education must clearly be concerned with cultural issues but later, as the level of education increases, mathematics becomes less culturally bound, are based on the assumption that ultimately mathematics education must be concerned with producing students who know Mathematics with a capital M. Questionnaire data suggest that, on the whole, Australian respondents were less inclined to hold this view than were other respondents. Perhaps the main reason why there is tendency for mathematicians in developing countries to believe that mathematics is essentially culture free is that it is very common for young, promising mathematicians in such countries to be sent to the USA (or the UK, France, etc.) to obtain higher degrees.

While it is true that almost all questionnaire respondents indicated that the staff of their mathematics departments were mostly citizens of the countries in which they were teaching (the only exceptions to this were the two Papua New Guinea universities, the University of Lesotho, and the University of Maiduguri, Nigeria), there were interesting and significant between-country differences in the proportions of mathematics staff who had obtained their higher degrees at institutions in countries other than where they were currently teaching. In the UK sample about 90% of staff had obtained their higher degrees in British universities, and in Canada most staff had obtained their higher degrees in Canada or the USA. While in the Australian and Indian samples most staff had higher degrees from institutions in their own country, it is interesting to observe that a large majority of the staff at prestigious institutions in these countries, such as the Universities of Sydney and Melbourne, and the Indian Institute of Science (at Bangalore), have higher degrees from the UK or the USA. Respondents from Commonwealth countries other than those already mentioned in this paragraph, including the four from New Zealand uni-

versities, indicated that the large majority of their staff had higher degrees from institutions abroad - mainly from British or North American universities.

Mathematics as culture-laden phenomena: recommendations

We now reproduce the eight recommendations in the final report (Ellerton and Clements, 1989a, pp. 33-35) directed at the Commonwealth of Learning, a body charged with the responsibility of establishing cooperation in distance education throughout the Commonwealth. Each of the recommendations is relevant to the main to our discussion here:

1 Tertiary institutions not already offering distance programmes in mathematics should not be encouraged to do so unless they are prepared to commit, on a continuing basis, adequate funds and staffing to the development of high quality, *locally produced* courses.

2 In carrying out its advisory role on the establishment of distance programmes in mathematics, the Commonwealth of Learning should encourage institutions to adopt action research policies. In this way the responsibility for planning and developing courses, and for the continuing provision of resources will, from the beginning, lie within the institutions, and will foster co-operative course team structures.

3 In view of Recommendation 2, the Commonwealth of Learning's policy on the role of consultants (from bodies such as the British Council, the World Bank, UNESCO, and even the Commonwealth of Learning itself) who are asked to advise on the establishment of distance courses in mathematics, should be one of facilitating within local institutions the operation of action research procedures. Generally speaking, such consultants should not recommend the adoption, in whole or in part, of overseas programmes, unless the genesis of the idea for such adoption comes from within the local institution.

4 Notwithstanding anything stated in Recommendations 1, 2 and 3, the Commonwealth of Learning should, in accord with Paragraph 22 of the Daniel Report (1988), act as a clearing-house for information and resources which will generally facilitate the development of distance education courses in mathematics. Copies of syllabuses, assessment procedures, printed materials and multi-media resources of all kinds should be located both at the Commonwealth of Learning headquarters in Vancouver, and in selected regional centres around the world (especially in third-world countries). In particular, succinct written and diagrammatic descriptions of a variety of successfully implemented models for the development of distance programmes in

mathematics should be available, supplemented if possible by videotapes illustrating how these models were established.

5 The Commonwealth of Learning should offer to co-ordinate regional seminars and workshops at which any or all of those models of distance education courses in mathematics (see Recommendation 4) in which local institutions have expressed interest would be surveyed, illustrated and discussed. In general, the Commonwealth of Learning should make itself available to assist institutions to plan and implement models which they feel are appropriate to their particular situations (see Recommendations 1, 2, and 3).

6 The Commonwealth of Learning should bring together a committee charged with the task of investigating the allegation, often heard in third-world countries, that mathematics degree qualifications from certain institutions in third-world (and other) countries are not being accorded their due international recognition. This committee should consist of a balanced representation of third-world and other countries in the Commonwealth. Furthermore, the Commonwealth of Learning should take steps to ensure that degrees based on distance education programmes in tertiary mathematics in Commonwealth countries should be accorded similar status to degrees derived solely or partly from on-campus studies.

7 In view of the controversy surrounding the notion of mathematics as a culture-free phenomenon, statements in future Commonwealth of Learning reports should not imply that the discipline of mathematics is more-or-less culture-free.

8 When an institution agrees to make materials which it has developed for its tertiary mathematics distance programmes available for use by institutions elsewhere, the price asked should not normally be much more than the total for printing (excluding course production), handling and postage costs (Ellerton and Clements, 1989a, pp. 33-35).

With respect to Recommendation 6, it should be noted that the interview component of the study revealed that, while ordinary and higher degrees in mathematics obtained from most universities in the UK (and to a slightly lesser extent, perhaps, in Canada, Australia, and New Zealand) are accepted around the world as reflecting appropriate mathematical expertise, the same is not true of mathematics degrees obtained from tertiary institutions in many other Commonwealth countries. This is a serious concern and indeed a source of anger in tertiary mathematics departments in these countries, where it is felt that often there is an unfair stigma associated with the products of their work.

As a case in point, it is well known that on the Indian sub-continent there are many extremely strong mathematics departments in universities, yet

mathematics degrees from these departments are not always appropriately regarded. For example, when an outstanding Bangladeshi woman with a masters degree in mathematics from the University of Dhaka took up a three-year Ph.D. scholarship at an English university, she was informed, after she had arrived in England, that she would first have to complete a two-year masters degree, at the English University, before she would be permitted to begin her doctoral programme. She began coursework in the masters programme, but her work was of such quality that, after two terms, she was allowed to transfer to the doctoral programme which she subsequently completed in the minimum time. She commented in an interview: 'The system beats us. We (university mathematics departments in England and Bangladesh) do the same things.' While recognising the sensitivity and difficulty of this issue, there is surely a case for developing procedures which permit quality mathematics qualifications, wherever gained, to be given due recognition.

The relevance of this point to the culture-free issue is that tertiary mathematics departments in third- and fourth-world countries feel constrained to offer courses that obviously match, both in content and standard, tertiary courses in countries such as the USA and the UK. If they do not do this, then their students will not be accepted for postgraduate studies. Even worse than this, the reputation of their degrees, already low in many cases, will be downgraded even further. Given these circumstances, the mathematics departments feel that they are not able to offer courses that take full account of the cultural heritages of their students.

On this point the recent 'everyday cognition' research in mathematics education, by people such as Carraher (1988), d'Ambrosio (1985), Lave (1988), and Saxe (1988), suggests that the urgent business of mathematics educators is to bring the mathematics of the 'street' (or, more generally, of the local culture) into the mathematics classroom. School mathematics should be generated by societal needs and aspirations rather than be an appendix to them. To this end, mathematics curricula cannot properly be constructed by armchair theorists remote from the action. That is the main lesson of history, yet moves to translate distance mathematics materials developed in one cultural context to other contexts, virtually intact, and moves towards national curriculum and assessment in mathematics, suggests we have failed to understand our histories.

Chapter 14

If it's good for you do you have to swallow it? Some reflections on interaction and independence from research into teletutorials

Diane Thompson

Introduction

IT HAS BEEN claimed that audioconferencing is now the most widespread application of information technology in distance education (Winders, 1988, p. 18). In the period 1983-1989 the Institute of Distance Education (formerly the Distance Education Unit) of Deakin university has promoted the use of audioconferencing through teletutorials in off-campus teaching (Grimwade, 1984a; 1984b; Grace and Thompson, 1989).

The term 'teletutorial' refers to the educational application of Telecom Australia's facilities for multiple simultaneous telephone links. It does not refer here to tutorials conducted by telephone for single students, though this is also quite common. Furthermore, unlike some institutions where teletutorials are linked with a group or groups of students gathered at a study centre or similar location, at Deakin University the configuration is usually that the tutor is linked with up to nine students at individual locations.

This paper draws on research carried out by the author and a colleague, Margaret Grace, in 1988 and 1989.

The research project

The orientation of the IDE Evaluative Research Group is towards qualitative, formative evaluation. Parlett and Hamilton (1978) distinguish two approaches to evaluative research. The first, which they call the 'agricultural-botany' framework, 'utilises the hypothetical-deductive methodology derived from the experimental and mental testing traditions in psychology'. The second approach draws on hermeneutic methods from interpretive social science.

These approaches differ in both aims and methodology. Typically, the former is concerned with quantifying outcomes and seeking causal explanation through a linear research process modelled on the 'classic' scientific hypothetical-deductive method. The aim of the latter is illuminative and

the research process follows a cyclic pattern. The analysis and interpretation of information gathered by a variety of techniques, typically including participant observation, is used to shape further inquiry. In this way the focus of inquiry is progressively refined rather than determined at the outset.

In the case studies that formed the basis of this research, six processes of inquiry were pursued more or less concurrently: a survey of relevant literature; participant observation of teletutorials in progress; a survey of student opinion and response to teletutorial experience; telephone contact with individual students; interviews with a selected study group; interviews with academic staff who conducted the teletutorials. Each of these methods of gathering knowledge about teletutorials contributed to the evolving process of the total evaluation in such a way that several stages are discernible.

The first stage was the formulation of the research design. The second stage included listening to and observing the way the first two or three tutorials were conducted by the tutors and making preliminary telephone calls to four of the students who had participated in at least one of the teletutorials we had chosen to monitor. The purpose of the calls was to try to ascertain on what criteria students would evaluate teletutorials. From this a questionnaire was designed and dispatched with a covering letter.

The design of this questionnaire represents a stage of the progressive refocusing of the inquiry, and affected the approach to the next phase. It reflects a growing appreciation by the researchers of the students' situations, an appreciation already formed to some extent by past experiences as students, tutors and parents. Thus the observations and perceptions of the researchers were informed and shaped by their own experience and by their awareness of the feelings and opinions of the people who were participating in the tutorials.

The first questions were aimed at finding out about the students' personal circumstances, the physical circumstances in which they took calls, and the degree of confidence or apprehension with which they approached the teletutorials. The next questions asked what students thought should be the aims of teletutorials, and to what extent these were met. Next the students were asked to evaluate individual teletutorials according to thirteen nominated items. The final summative section sought information on the students' overall perceptions of the value of teletutorials and their advantages and disadvantages for teaching and learning. Students were given the opportunity to make any further comments they considered appropriate. Pertinent to this paper are three questions:

- What are any aspects of their personal circumstances which cause problems for students participating in teletutorials?
- Where do they take teletutorial calls?

- How satisfactory are these arrangements for taking teletutorial calls?

In the case of the Master of Business Administration (MBA) students in the project, while the core questions were retained, the approach was modified to seek information from all participants, whether they were involved in the teletutorial program or not. This was in response to a perceived need to look at why students who were eligible to participate in teletutorial programs chose not to do so. A further questionnaire was sent to a random sample of students in other courses who had chosen not to participate. Writing on a related issue over ten years ago, Turok (1977,p. 26) sought urgently for a study to find out why some students do not attend tutorials and counselling sessions. To my knowledge, however, this remains an area that has not received substantial attention, yet it contributes significantly to our understanding of how our students respond to teletutorials. Perhaps one explanation for this being a traditionally disregarded area is that it is difficult to gain feedback from such students and this research in terms of the return rate of completed questionnaires bears this out.

We have analysed 318 completed questionnaires. Table 14.1 indicates the questionnaires sent and returned. No reminders were sent, but in 1988 the 22 students who had not returned the questionnaire were contacted by telephone.

Table 14.1

year	sent	returned	source
1988	49	40	All students of selected teletutorials
1989	293	172	All MBA students
1989	9	9	A selected MBA study group
1989	144	47	Random selection of students participating in teletutorials
1989	175	50	Random selection of students who chose not to participate in teletutorials

At least one of the researchers listened to each teletutorial as it occurred. Sometimes this was in the presence of the tutor, and sometimes the researcher listened from her own home. The former method provided opportunities to observe the tutor while the tutorial was in progress, the latter method enabled the researcher to identify with the situation of the students removed from visual cues. A tape recording was made of each teletutorial, with the approval of the tutors and the students, and in accordance with Government regulations. This allowed the researchers opportunities to check their perceptions of what had taken place during the calls and to make a more detailed analysis of content.

A further stage of reflection and refocusing took place as the researchers discussed their survey of the literature, their perceptions of the way the various teletutorials were conducted, their experiences as silent participants, and their preliminary review of the returned questionnaires prior to formal collation and analysis. This process of reflection influenced the approach to the next stage of the enquiry, which was the conduct of interviews with the tutors. Interviews were arranged with all the people who had conducted teletutorials selected for the evaluation program in 1988 and in 1989 further interviews were held. While the same core issues were canvassed, the researchers attempted to tailor the discussion to suit individual cases, in accordance with their perceptions of the tutor's approach, and drawing upon the comments and evaluations of the students. The framework of the interviews was open, allowing the tutors to raise and develop points of view as they wished. This meant that tutors had the opportunity to expound their aims and educational philosophy in regard to teletutorials, and also to respond to divergent views put by other people. In particular they were invited to indicate their reactions to their own teletutorials and their views of the function of teletutorials in distance education.

In one instance in 1988 a tutor was observed conducting a face-to-face tutorial in the same course as he had conducted the teletutorials for off-campus students the previous evening. In 1989 a second tutor was observed conducting tutorials for the same group in three different ways: face-to-face, by telephone and with video enhancement. The aim of including this in the research was to gain some perceptions of the influence the changed medium (the telephone) had on the tutor's presentation of the same material.

The collation and thematising of all the information is a continuing process. It has resulted in one internal report, a handbook for teletutors and a brochure for students who participate in the program and one area of this research forms the basis of the second part of this paper. The material has been treated in various ways including analysis, synthesis and interpretation in context. For example, students' evaluations of particular teletutorials could be compared with the researchers' observations of the same tutorials and tutor's comments on their aims and approach. In discussing teaching by telephone, Short (1974, p. 66) claims that the experimental and theoretical work overlooks what he terms a 'crucial' aspect: the users' attitudes. In this research 'user reactions' are the focus of the study.

Teletutorials and interaction

Borje Holmberg (1982, p. 91) has argued that there seems to be at least two different schools of thought on distance education. One stresses individual study and individual, non-contiguous tutoring on the basis of course

materials produced for large numbers of students; the other aims at parallelism with resident study and usually includes regular face-to-face contact. Increasingly, however, advocates and practitioners of the former approach attempt to provide avenues for contact between the individual and the university. For some it is axiomatic: 'An educational form like distance teaching *naturally* requires that students and teachers, as well as the students among themselves, maintain contact' (Willen, 1981, p. 110; my emphasis). Probably there is some validity to Daniel and Marquis's claim that 'naturally' there is a tendency for tutors unused to dialogue by correspondence to attempt to 'pull the system towards more of the face-to-face contact which they find more familiar and fulfilling' (1983, p. 351). While this may help us understand the initial inclination, one critical pedagogical element of face-to-face instruction is the opportunity for interactive learning (defined simply here as the sharing of understandings between peers as well as mentors).

Interaction is widely regarded as an essential element of distance education (Daniel and Marquis, 1983; Holmberg, 1980; Rumble, 1986; Sewart, 1981) yet one-way communication is seen to dominate. Too often the teacher's role has been that of an author or examiner, rather than of a tutor (Winders, 1988, 155) and 'true dialogue' denied. This has led to accusations that many distance education systems are 'information processing' or 'systematic' models which reduce learning to processing, storage and retrieval of information, with the learner a 'passive' recipient (Rumble, 1986, 12). Juler reminds us that interaction does not have be of an oral nature - 'I conclude that text is basic to all education and that the interactions students have with their texts are just as important as the interactions they have with people' (Juler, 1990, p. 28). There is justified concern, however, that not only are off-campus students denied the contact opportunities available to their on-campus colleagues, but that their approach to academic learning is seriously restricted through the loss of interaction because of lack of participation in seminars and tutorials.

As the Open University looks for the students to engage with their learning:

> We want students to go 'beyond the information' presented, to apply knowledge to new situations, actively to construct meaning, and to build on their existing understandings and experiences so as to relate ideas and information together ... A framework for dialogue ... is essential for the majority of students. Without this unique contribution to student learning, the quality of students' learning and understanding are likely to suffer (Morgan, 1985, pp. 41, 45).

Our research showed a similar concern, for example, a lecturer said:

> A university education should challenge students to think for themselves and develop a critical attitude. Part of the teaching method of a university should be to put students in situations where they have

> to articulate their ideas and defend them. This is the function of the tutorial. Without such experience external students are deprived of an essential part of the university experience. Telephone tutorials are at least some kind of substitute for the traditional tutorial (Grace and Thompson, 1989, p. 18).

By its very definition, 'individual' learning cannot allow students to interact with one another and develop discussion and interpersonal skills, for instance. This has heralded the realization that group learning skills are an important area of concern to educational technologists in their own right (Percival and Ellington, 1984, p. 25). One significant way in which interaction has been facilitated for students who do not have face-to-face contact is through the use of the telephone. As Bates claims:

> if distance education systems wish to provide a wide range of courses to students who are often scattered or isolated, telephone tuition is the only practical way of providing two-way, interactive tutorials (Bates, 1982, p. 12).

Dutton concludes similarly: 'Teleconferencing systems support two-way, interpersonal communication and to an extent that other educational media do not' (1982, p. 110). Where such contact is organised on a group basis, as in teletutorials, it is possible for the individual student at home to share and discuss with fellow students and the tutor.

If we accept with Gough that 'the critical point in terms of a philosophy of distance education is the principle of equality of opportunity' (1984, p.23) and that interaction *is* critical to effective tertiary education, it seems self-evident that we should grasp any opportunities that may achieve this.

Teletutorials and independence

However, if we accept that for many students the *raison-d'etre* of distance education is that they are free to study independently with as few of the constraints and confines of traditional institutions as possible, how justified is it to intrude on their learning autonomy, even if we have the best of intentions? This question is posed because interviews with tutors that formed part of our research indicated that where interaction is seen as of fundamental significance it is a logical step to see it as a necessary component of all students' learning experience and the teletutorial is put forward as an important way in which this can be achieved.

When it is recognised that the majority of students enrolled in distance education in Australia live in metropolitan areas and presumably could participate in some face-to-face tutorials in at least some courses in their local area if this were a high priority, this reinforces the conclusion that the

decision to study without such interaction is a deliberate choice for many of our students, rather than one forced upon them by necessity. A study of students at Murdoch university where only 11% of the students surveyed supported teleconferencing gave a compelling indication to the researcher concerned of the 'reluctance to interact on the part of the students'(Potter, 1982, p. 221). Our research showed, however, that a substantial number of students who chose not to participate in teletutorials gave as their reason that they already had access to face-to-face tutorials, so it would be unduly simplistic to assume non-involvement was posited on the desire to evade interaction. Students at Deakin University, who were similarly inexperienced with teletutorials to those at Murdoch, gave numerous reasons to explain their lack of involvement. Yet while those who had experienced teletutorials stressed the opportunities they provided for interaction (if, understandably, not necessarily in these terms) no student who chose not to take teletutorial calls took a philosophical stance on how they wished to learn. Their concerns were of a far more practical nature. While it is impossible to refute the claim that students are not involved because, as one lecturer we interviewed averred, they are 'too scared to parade their own ignorance and minimal work and you'll never get them to confess to this', students did provide abundant information on problems that affected their involvement.

When we offer distance students the opportunity to participate in teletutorials what are the practical implications for the students concerned? To quote Daniel and Marquis:

> the adult student is busy and pragmatic. His involvement with the remote-learning system is only a minor aspect of his life. Learning activities must be organized to provide maximum advantage for minimum inconvenience (1983, p. 355).

Distance students are not 'captive audiences' to the same extent as traditional students: their own view of their needs cannot be disregarded. 'Since distance education allows the student freedom of place and time, any interaction which limits this freedom negates the fundamental reasons for the student's choice of the distance mode'. (Winders, 1988, 5) Partly in response to this, distance learning courses tend to allow individuals to pace their learning and schedule their study programs to fit in with the many other demands on their time. (Cosgrove, 1982, 21)

This has immediate consequences if teletutoring is introduced. Teletutorials prescribe fixed times for the tutorial itself but also, to be effective, demand that students are at similar stages in their course and are prepared for the discussion that is planned (Grace and Thompson, 1989, p. 35). 'Group interactions are usually impossible without pacing, simply because they are based on bringing together students who are at the same point in a course' (Daniel and Marquis, 1983, p. 345). At the Open University audio telephone tutorials were not considered effective for impromptu tutorials

on unprepared topics and our findings support this. Research in a related area (Willen, 1981, 120) showed that television and radio programs were not popular with distance students because they were broadcast at set times and the majority of those following the courses were not free to watch or listen. The same is true of teletutorials. Competing commitments are an important reason that students are unable to participate.

Students involved in off-campus study normally set their studies in a complex context that demands prioritising options. Even those students who value very highly such encounters as teletutorials are not often in the position to make unilateral decisions in relation to the circumstances of their study. Students cited the need to change church services, sporting fixtures and business meetings, for instance, and these clearly illustrate the diverse impact of a decision to hold teletutorials. Thus times set aside for teletutorials require that students negotiate with their households, their employers, and others affected, if they are to be able to participate. This has several consequences:

- Students cannot necessarily guarantee the stated tutorial time will be suitable over a period of several weeks or months. If students cannot take a call this does not necessarily mean they have lost interest or are dissatisfied with earlier teletutorials.

  Mr B was very happy with his first teletutorial and looked forward to the next. The time clashed with a business appointment he could not change and the final teletutorial was on the evening of his wife's birthday.
- Students cannot guarantee that they will be able to devote the set time to the teletutorial, and they may terminate their involvement for reasons that have nothing to do with the call's value to them personally.

  Mrs S is a single parent of two young children. While she is pleased to be involved with teletutorials she cannot always arrange for the children to be looked after. When they do interrupt her teletutorial calls she believes they cannot be ignored.
- Students may find it difficult to retain their concentration for reasons that have nothing to do with their interests or abilities.

  Mr L uses a wall telephone located in the hallway of a guest house; Mrs F travels 40km to take her calls at the home of a friend and is constantly aware of how she is monopolising the telephone for the period involved.
- The attitudes of students may be affected negatively for reasons that are not readily apparent to the tutor.

  One evening a teletutorial was timetabled that did not eventuate. This was quite distressful at my end, as my husband was taking the children to the park to enable me to have an effective call. We waited some time before assuming it wasn't on; meanwhile the children were frozen and mosquito bitten, not to mention my husband's ideas and corre-

> sponding patience was running rather low! Perhaps our tight schedules and difficult arrangements could be considered more (Grace and Thompson, 1989).

In allowing students to take their teletutorial calls at their nominated location it would appear that such students are advantaged over those who attend face-to-face tutorials. They do not have to bear any costs, nor do they face the inconvenience of having to get to the centre. Given this scenario it could be expected that students would be very satisfied with such apparently advantageous arrangements. The research does not entirely bear this out, however. Of the 265 responses, 124 (46.7%), stated that the arrangements were 'very satisfactory' but an identical number saw them only as 'satisfactory'. Moreover, a further 17 (6.4%) considered the location in which they took teletutorial calls was 'very unsatisfactory'. It is interesting that the level of perceived satisfaction is significantly less for those students who are speculating on what it would mean for them to take such a call as they have chosen not to be involved. Of the 34 responses, 18 (52.9%) considered the arrangements would be but 'Satisfactory' and 5 (14.7%) thought they would be 'very unsatisfactory'.

Most students (61.9% overall, but 84.7% when the MBA are excluded) chose to take the call in their homes, but some (most particularly MBA students where 24.6% use their business numbers and a further 17% use both home and business numbers) took their calls at their place of employment. Other options include taking calls at motels or hotels when away on holiday or on business. Teletutorials have even occurred in hospital wards. Since the typical location, however, is the home this will be the area that is especially considered.

In speculating on the home environment for learning in the 1980s and 1990s, Michael Richardson (1980, p. 19) considered it arguable that 'a high percentage of homes...are now at least as well equipped in terms of audio-visual hardware, paperback and daily press 'software' and access to off-air national transmission, as were the great majority of school classrooms and indeed university lecture theatres as little as fifteen years ago'. In this context the home can be seen as a most desirable location. Certainly nearly all of our students have access to the essential equipment for teletutorials, a telephone, in their homes. However, the location of the telephone, itself, can be problematic as often it is located in the hub of the household for family convenience. This is one reason that, for a significant number of students, a vital component to the success of their teletutorial is either gained at considerable difficulty or is absent.

In the home there is no immunity from distraction as with the face-to-face tutorial. When students attend face-to-face tutorials on the campus or at a study centre, they are placed in an environment specifically designed to facilitate education. Achieving a quiet environment in the home is often as elusive as it is desired. A home caters essentially for the domestic needs of

the family and typically teletutorial calls impinge on the activities of all in the household: televisions are turned down or off, spouses take over domestic chores, meals are re-scheduled, children and dogs are relegated to other parts of the house or sent away for the period ... and so the list continues. The aim of such domestic re-organisation is to ensure a quiet, uninterrupted environment for the student taking the teletutorial call. The tone of the responses that again and again were making this point was not one of complaint or disaffection, but rather an indication of the pressure and tension that can result.

In taking the university to the students' homes there seems to be an assumption on the part of the providers that the home is invariably a fitting place. Rothe (1985, 202) is one of the few writers in this field who makes specific reference to the 'learners' home environments' and sees this as one contributor to problems with audio teleconferencing. Quoting Sherman (1982) and House (1983) to support his conclusion that the learners' contexts during such sessions certainly contribute to their involvement in interactions - they could even be 'paramount' - he concludes with McFarlane and Nissen (1982, 124) that the room is likely to be given little attention by those who design and evaluate - it is 'consistently the missing element'. McFarlane and Nissen, communications consultants, provide a detailed concept design stressing that the importance of the room is the least understood but yet a most critical element to successful teleconferencing. In their analysis with their design specifications that draw on sophisticated technologies to maintain temperature and humidity, to minimize acoustic detriment, and so on, the world of the student with the almost inevitable distractions is a world apart. But such information does reinforce that we do need to be more aware of the environment in which students take their teletutorial calls. Tutors need to be aware, and show their students they are aware, of the constraints under which they study and students should be encouraged not to feel guilty if the place where they take their calls does not replicate an on-campus seminar room.

Conclusion

I do not dispute that the home can be an effective place of learning - the success of so many distance students in itself bears testimony to this. However, as technology allows us to bring the university to the home to an increasingly great extent, as we make further demands on students under the banner of 'support', so we need to understand more fully the consequences of our actions for our students. As educators of distance students, our purpose is surely to enhance - not to deteriorate - students' study. Do we invariably assume that by offering students teletutorials we necessarily enhance and never deteriorate their learning?

We found that teletutorials can be of enormous benefit for some off-campus students. However, it is up to the students to decide whether or not they wish to participate and we must have some respect for their decision if they choose not to do so. My reservation is that we assume that off-campus students can become involved in such activities very readily and that they should welcome and appreciate the service without qualifications. When they choose not to be involved, does this make them uninterested students? Are they deliberately choosing the sanctuary of private study and limited accountability? If they drop out, are they just 'apathetic'? Or should we, rather, have a fuller appreciation of the reasons these people chose this form of study and seek to understand the consequences of taking tutorials to the home? The latter is certainly my view.

Part 3: Ideas in progress

Chapter 15

Tinker, tailor, soldier, spy.... roles and challenges in evaluative studies of technological innovations

Angela Castro

Smiley and his people

THIS PAPER BORROWS the title of one of John Le Carre's novels about the spy Smiley and his colleagues to help provoke debates about: the purpose of evaluative research; the demanding multi-faceted roles peculiar to an institutionally-based technology developer; and the intervention of politics in research and scholarship. I present some personal experience, views and ideas, together with those of colleagues, on the Australian Telecom- based network: AOLIN. These views generate, rather than reduce, uncertainties about evaluative research in technology, but I hope that, through the sharing of similar self-evaluations by others, we can begin some useful discussions about the future direction of technological innovations.

Parlett and Hamilton (1987) argue that 'the illuminative evaluator is likely to increase rather than lessen the sense of uncertainty in education' (p.72). They suggest that such an evaluator's task is:

> ... to provide a comprehensive understanding of the complex reality (or realities) surrounding the programme: in short to 'illuminate'. In his report, therefore, the evaluator aims to sharpen discussion, disentangle complexities, isolate the significant from the trivial and to raise the level the sophistication of the level of debate (p.71).

I have come to appreciate the tremendous implication and importance that this view holds for technology researchers after some years of intensive involvement with computer-mediated communication (CMC) research. In the beginning of my encounter with computer-related technology back in 1982, I unconsciously adopted a stance that had some leaning to the scientific paradigm which helps fuel a spurious technological simplification of reality in the world of technology research. However, doubts and questions started to appear sometime around 1987 after relinquishing the management of a CMC system and becoming purely an observer on other systems; where I saw a replay in others of my own former orientation, obsession and prejudices. I began to see the absurdities of many claims *for* and *against* technology. There just cannot be such a thing as a definitive study of any of the new technologies based on a single application or in a

single context. The potential and nature of technologies change rapidly while the human acceptance of technology is a slow process which also involves subtle and more complex individual and sociological changes. Hence, evaluative studies of technological innovations really require, and indeed, demand a different time frame.

With the challenge of Parlett and Hamilton in mind, I would like to proceed to examine the roles and tasks of the technology developer.

The technology developer

The term 'course developer' in distance education literature has come to refer to the educational consultant engaged to assist the subject specialists to develop off-campus courses in a course team situation. Generally, the collaboration is of a collegiate nature, with the subject expert providing the contents and the course developer suggesting process and (more often) the means of delivering the contents and maintaining an effective teaching (rather than learning) environment. Hence, a course developer is also addressed as the 'educational technologist'. Harris (1989) questions the functions, validity and credibility of educational technologists in the context of the British Open University; and in a more recent Australian book, distance educators have started to share their views on the closely related subject of course development and these views are far from being heterogeneous (Parer, 1989).

Here I have coined the term 'technology developer' to describe those people who are involved with innovations based on the newer, often computer-mediated, technologies in institutions for the purpose of education or training. Such people do not, however, have to be either subject experts or course developers only, they can be both. Many of the criticisms directed at the educational technologist can be applied equally to the technology developer whose current pre-occupation with the computers as a delivery medium, for example, works from a presupposition that students are passive recipients of information, rather than people who are capable of making choices, decoding and constructing meaning from participation in a new learning environment.

The title of this paper, at least superficially, refers to both the multi-faceted roles surrounding technology developers, and to the various roles progressively acquired as they journey further into the world of technology. The metaphor of 'tinkers' is used to represent those who explore and investigate technology for its own sake or for the sake of improving the quality and quantity of education; 'tailors' are those who try to customize technology to fit curriculum objectives or *vice versa*; 'soldiers' are those who endeavour to introduce technology to the uninitiated and the skeptics; and 'spies' are those inspired by personal convictions, or compelled by institu-

tional objectives and professional motives, to resort to surreptitious means to promote and lobby for a quicker adoption of the new technologies.

From backroom tinkering to centre stage performance

Few of those engaged in technology innovations have the practical and official support of their institutions from the outset. The 'let there be light' type of decrees proclaimed by the visionary senoir management at Carnegie-Mellon which eventually helped transform the campus and culture have not occurred in Australia (Kiesler and Sproul, 1987). The serious effort that goes into research at Brown University, as described by Van Dam, is only an impossible dream to most Australian researchers:

> These experiences led to Brown's wholesale commitment to work stations and in fact to the creation in 1983 of IRIS, our Institute of Research on Information and Scholarship. IRIS not only creates scholars' workstation software but also has a completely symmetrical program evaluation branch where social scientists with an interest in this area study needs, requirements and impact of this technology on scholarly work (Van Dam, 1988, p. 893).

Unsurprisingly, IRIS has now become an international centre for hypertext research, and works produced by their researchers, including evaluative studies, are of a consistently high standard. In contrast, Australian learning and experimenting with technology may be compared to a backroom operation. Spare work and personal time and facilities are put aside for exploration and experiments, but more as a self-directed form of staff development, than a formal project having the institutional blessing.

Justification and accountability in technological innovations

Teachers can try out a new lesson plan or a new teaching style in the classroom; if it does not work, they can abandon it and try out another, usually without serious consequences. Off-campus course writers, when introducing some innovative features in printed courses which subsequently fail to interest students, do not expect public outcries and recriminations. However, it is quite a different matter with implementing a new technology because technological innovation involves high visible costs for development and operation, in addition to invisible costs in the changes to people's job responsibilities and personal habits of tackling tasks, and in the modification of institutional infrastructures. Often such costs are irretrievable and the secondary consequences have important ethical, political and social aspects. The formal implementation of technological

innovations is, therefore, more concerned with justification and accountability.

Technological innovators have to argue and to prove that the proposed new technologies are more effective and superior to conventional means; both are immensely difficult in the absence of a suitable comparative and workable framework. The whole problem, is complicated by the volatility of technology and our minimal understanding of human-machine interaction. These difficulties are compounded when the innovators become imbued with the polemics of technology.

Both player and umpire be

Commonly, the technology developer is also the evaluator. There are a few possible explanations for this occurrence. The first is the lack of funds to engage an independent evaluator. The second is that there needs to be someone with intimate knowledge about the aims and objectives of the innovation and of the working of the technology being trialled. Finally, technology developers feel that practitioners ought to be able to reflect critically on their own practice. These explanations present some methodological and ethical dilemmas for the technology developer-cum-evaluator, in addition to some confusion and discomfort for others involved in the innovation. For example, the emotional attachment of technology developers to their technology make it more difficult to accept adverse criticism graciously. An 'expert' who knows the full potential and the 'correct' use of the technology will also tend to be less forgiving and considerate, often attributing misuse, low or non-use to the user's incompetence, apathy and indolence and is, therefore, less ready to follow trails and uncover the reasons for the users' behaviour. The users probably find it equally difficult to ascertain if the technology developer is donning an evaluator's hat or that of the innovation promoter during an evaluation interview. Hence, they may be less forthcoming in their appraisal of the innovation or they may feel that they have been placed in a compromising situation.

Mechanistic devices in data collection and analysis

Evaluators who are also technology developers will find it relatively easy to obtain special information if they are the architects of the innovation system and they possess programming skill. For example, in innovative CMC projects the evaluator can obtain from their computer systems the participants' usage to find out how many messages have been sent, at what times, for what durations, to whom,and so forth. Even the content of messages can be read or key words searched. An important ethical ques-

tion is: does the access to such information constitute a violation of the privacy of the participants?

There is an increasing trend towards using computer to record, store and analyse qualitative data in research (Richards and Richards, 1989; Seidel and Clark, 1984). Electronically transmitted texts can be used as interview transcripts which can then be manipulated by software for the purpose of sorting, categorizing, analysis and interpretation. But the ownership of electronic messages is a thorny and unresolved legal issue (Wright, 1989). For example, it is generally assumed that electronic messages are a form of publishing and the funding body of a message system may be regarded as the publisher and, therefore, owns the copyright. However, this has yet to be tested fully. Let us also think about the situation when an evaluator has obtained the prior permission of all the participants to observe a computer conference; does this provide sufficient authorisation to use, cite, or refer to the public messages sent to that conference in the evaluation report without having to ask for permission from each participant ? Intellectual property and copyright issues in CMC evaluative research urgently need addressing so that guidelines can be established to save confusion and fear of legal infringements, as CMC messages are a rich source of research.

Stenhouse (1987) described participant observation - for this is what, I believe, the aforementioned technology evaluator is doing - as follows:

> The participant observer conducts his research by joining a social group, participating to a greater or lesser extent in its activities in order to achieve an understanding of the meanings and perceptions of its members, but retaining a degree of detachment as an observer and recording observations and conversations (1987, p. 214)

This method, when used to evaluate computer conferencing and electronic mail projects, has some unintended results and repercussions if we are concerned about the power of the 'all-knowing, all-seeing, and all-remembering' computers in the perpetuation of data. Phillips and Pease (1987) offer a plausible explanation for the hostility and distrust they encountered on a CMC network:

> The potential for non obtrusive observation can lead to a temptation to spy, and several participants expressed their fear of outside observers acting like secret agents, raiding conferences at will. Researchers should announce their presence for ethical reasons; yet, as when an anthropologist enters an alien culture, the awareness of that presence may act as an inhibiting factor. The essence of the worry lies in the lack of control over the intruder's behaviour (p.50-51).

Electronically transmitted messages or information, unlike the taped interview which could be locked away or quoted with names or addresses removed, are signed and dated. Even if dates and names are removed, they can often easily be traced. Electronic messages have a way of surviv-

ing for a long period of time. So it is not inconceivable that a public contribution a participant made about a particular aspect of the CMC project could well re-surface later in a new and most unlikely venue simply because, for example, someone who had access to the conference happened to download the contribution , possibly to pass it on to other CMC networks. If the project had already been concluded by then, who would be held responsible for this apparent breach of copyright and ethics if, indeed, there was any protection in the first place?

The use of a hidden camera is another method of capturing data. This is usually used for observing procedural activities connected with the operation of an innovation. While this may not be intrusive in the physical sense, it can be in the moral sense, especially if the presence of the camera is not known to the subject being observed. The incorporation of mechanistic devices, such as the computer or the camera, into evaluation design may be efficient and save the evaluator labour and time, but it does have the potential of eroding the trust between the evaluator and subjects. Such devices may have to be used with a great deal of caution, honesty, and fairness for all concerned so as to maintain the moral integrity of research.

The purpose of evaluation

Stenhouse (1987) describes research as 'systemic inquiries made public', and evaluation may be defined likewise. Alkin (1987), however, believes that evaluation serves a different purpose from research:

> The author has for some years felt that it was important to recognise the distinction between studies designed primarily to add to the body of knowledge (research) and those primarily to provide information for decision making (evaluation)....Thus, while the comment 'even if the results of a study were not utilised, its redeeming feature is its intrinsic value and its contribution to the corpus of knowledge': is appropriate as a statement for a study designed primarily as a research, it is not appropriate for an evaluation study (p. 315).

Most evaluation experts agree that the purpose of evaluation is gathering information to assist decision making (Stufflebeam and Guba, 1968; Weiss, 1972; Cronbach, 1982; Parlett and Hamilton, 1987). Most experts also concede that since evaluation implies judgement, there is always an undercurrent of power in evaluation procedure (Nesbit, 1979). In the evaluation of technological innovations, the pressure for accountability makes this explicit, bringing evaluation into the power structure in education. Macdonald (1983) suggests that the new technology is called 'high' because of the 'relatively high risks involved, the possibility of high return, its high pace of change and its high information intensity' (p. 331). All these factors exert internal and external, visible and invisible pressures on all parties involved. The evaluators of technological innovations become

the 'gatekeepers' of important data and knowledge which can affect existing power relations in institutions.

Parlett and Hamilton (1987) say that generally there are at least three decision-making groups involved in most evaluations: the participants of an innovation, the sponsoring body, and the external public:

> Each group or constituency will look to the report for help in making different decisions. The participants, for example, will be anxious to correct deficiencies, make improvements and establish future priorities. The sponsors and board members will be concerned with pedagogic issues but will also want to know the innovation's cost, use of resources and outside reputation. The outsiders will read the report to decide or not whether the scheme 'has worked', or to see whether it could be applied or adapted to their own situations (p. 71).

Evaluators cannot realistically acknowledge the interests of *all* these groups in their design or conclusions, and it is highly unlikely that they will be able to recommend a simple 'yes' or 'no' for the innovation's future. By and large, Parlett and Hamilton believe that, in carrying out evaluation, the evaluator should resist becoming embroiled in politics and emphasise the information gathering rather than the decision-making component of the evaluation brief. The decision makers are 'assisted and abetted' (Stufflebeam and Guba, 1968) only in the sense that they have been provided with a sensible presentation of important information and sound interpretation to stimulate more critical thinking.

Learning milieux

Casting a wider net for data collection and adopting a more flexible framework of enquiry are costly and time consuming, but they are necessary as a self-imposed safeguard against drawing simplistic conclusions and abetting political expediency. The 'learning milieu' concept of Parlett and Hamilton is a useful one to adopt to help identify qualitative data which reveal kaleidoscopic glimpses of the impact of the innovation on the participant of the innovation and *vice versa*. Learning milieu is the socio-psychological and material environment in which students and teachers work together. Technological innovation cannot be isolated from its social environment and be examined like a chemical rarity in a laboratory. The evaluator has to view it in the nexus of cultural, social, institutional and psychological variables, and analyse the interdependence of a multitude of factors, practices, orientations and attitudes of the students and other players involved in each milieu. The introduction of an educational innovation invariably has repercussions throughout an educational institution and its learning milieux, in turn these unintended consequences are likely to affect the innovation itself, changing its form and moderating its impact; ignoring such would be absurd.

Why are evaluations left unused?

If technology innovations are evaluated using the learning milieu as a central concept to allow plurality of views and myriad perspectives, then the 'truths' uncovered will be relative and conditional rather than unequivocal and universal. This can make life too difficult for the decision maker, and so no decision may be taken as a result. Alkin (1987) cites four situations where the sponsors of evaluations could well determine that the evaluation results will not be made known, and these are when evaluation is commissioned for the reasons of expediency, legal requirement, public relations or professional prestige. The last one deserves our attention as it is becoming more popular as people ride on the bandwagon of technology:

> Occasionally, administrators view themselves as 'men on the move' and all decisions and actions taken are seen as serving this master objective. Thus, to build a reputation as an innovator, it is necessary to have commissioned at least one evaluation to demonstrate one's recognition and awareness of this new innovation procedure. If the results of the evaluation demonstrate the success of the 'innovative' programme that the administrator has started, all is true and good; otherwise it is enough simply to have commissioned an 'innovative' evaluation whose results will likely not see the light of the day (Alkin, 1987, p. 318).

I may add from personal knowledge a case where a report was made known in a partial fashion with some data omitted. Then a part of the data was accentuated as a diversion to protect the 'innovative' prestige of a senior supervisor of the project. Evaluators can refuse to take on assignments if they know in advance the political intent of the sponsors, but often intent is not evident when the evaluation is in progress or near completion and, therefore, extricating oneself becomes difficult. Hidden motives, false trails, cover-ups - the world of the technology developer and evaluators has started to bear a more alarming resemblance to the murky one inhabited by Smiley and his people.

Chapter 16

At the end of the line is a learner - whom is distance education really for?

Sue McNamara

Introduction

IN THIS PAPER I would like to take a few moments to reflect on one issue which it can be suggested might form a basis for research in distance education in Australia in the next decade. Since 1988 we have witnessed some rather drastic changes in the tertiary education sector and more particularly in the field of distance education. The upheavals generated by government initiatives have produced some benefits, some disappointments and quite a bit of indecision. On the positive side they have given the concepts of distance education and open learning recognition as equivalent, if not superior, to traditional education. On the negative side they have possibly foreshadowed the demise of the contributions of some of the 'specialist providers' and encouraged a trend towards an unhealthy competitiveness based primarily on economic rather than educational grounds.

This is not to say that education should not be accountable nor economically viable, but if Australia is to compete internationally with a reputation for quality that will take it well into the 21st Century, then short term 'band-aid' solutions brought about by the immediacy of a struggle for economic and political survival do not seem to have great credibility as a basis for a vision of the future. Indeed it is perhaps time we recognized the growing need for those of us working in the field (or on the periphery) to look beyond the narrow vision of political game playing and to establish an environment of co-operation which can only benefit the contribution which individuals and institutions might make to the theories, principles and practices of distance education and open learning across Australia. With that commitment in mind I would like to suggest a question to underpin future research and development in the field: whom is distance education *really* for?

Some thoughts on defining this question

Embodied in the question of 'whom is distance education *really* for?' are many of the concerns and issues pertaining to the design, development

and delivery of distance education. In the current climate of change, where lately in Australia the emphasis could be said to have been placed on the provider rather than the client, such a question may help by encouraging providers to reassess the very nature of offerings and operations in the context of those for whom they are providing the service. Whilst the terms 'client' and 'service' may seem at odds with the traditional view of education, they are nevertheless indicative of the changes occurring in tertiary education today, they do contribute toward the definition of the question.

Is the intention to turn education into training, in which narrow, job-related goals and objectives are to be achieved, with anything outside these objectives being seen as 'optional extras'? Or is it that the wider definition of 'education' is to be revitalised to form the basis of future development? Are we in distance education to equip our learners with currently required skills which will allow them to function in the present workforce or are we to provide them with a grounding which will allow them to explore and continue to learn, modify and update their skills in the future? Certainly the conflict between the notions of *training*, (which might be seen as a short term solution) and *education* (which might be viewed as a long term solution) must be resolved and either a compromise or a balance achieved if we are to examine the question - *whom is distance education really for* ? - in any depth.

Inevitably the changes occurring in the field of distance education in Australia have caused those educationalists working in the field to focus on the implications of changes for the profession. In a positive perspective the changes could be said to underline the potential for distance education to develop beyond the boundaries presently laid down by the structures of on-campus learning, and they incorporate a much greater appreciation of the application of technology and the broader concepts of open learning in the delivery of tertiary education. Foks's (1987) argument that open learning (which he sees as synonomous with distance education) is a 'state of mind' (p. 76) is perhaps illustrative of the vision we should be seeking. Further, his contention is that the only limitations on it are imposed by the skills and knowledge of the students, educators and administration. The accreditation of courses, community and industrial attitudes to education and available resources, might even lead us to raise questions about the constraints and limitations being placed on the design and delivery of courses through the application of inappropriate design, delivery and management strategies.

One example of this occurs in institutions which offer dual mode, on-campus and off-campus, courses. It might be suggested that many of the strategies presently in place in external studies departments, distance education centres and other development and management facilities are endeavouring to overlay or 'fit' the requirements of distance education to

on-campus structures and values. Thus, in the competition for funding and recognition within an institution, we continue to face inappropriate criteria and comparisons. Arger provides food for thought on this issue in his discussion of the identity crisis facing education developers working in distance education. No doubt many of those working in such roles can readily identify with his description of 'staff with schizophrenic professional identities' (1989b, p. 79) as they grapple with a multiple of roles and a lack of institutional recognition of the complexities of design and delivery. Metaphorically the expression 'out of sight, out of mind' may be applied to the relative acknowledgement given to those in the professional field of distance education in dual mode institutions. As much of the development and productivity of the field lies beyond the institutions' geographic boundaries, the results, returns and rewards often go unnoticed by the majority of those engaged in on-campus activities whose achievements are more readily observable (Jevons, 1987; Johnson, 1989).

From the above discussion arises an examination of educational philosophy in an endeavour to address the question. This examination needs to consider whether the models of development, and in particular management and administration, that we currently implement should be reversed? Should we rather be seeking to 'fit' the structures of on-campus study into an open learning /distance education mode rather than vice versa? Is not 'on campus mode', but one of the many modes of learning which can be encompassed in the term 'open learning'? What is the definition of 'distance'? Is geographical mileage still a relevant measure of distance? Is it an appropriate criteria for the classification of a course? Should there be such classifications as 'on-campus' and 'off-campus' ?

The implications for further radical change in this suggestion (that we place on-campus teaching, management and administration within the wider framework of distance education and open learning), the logistical and practical difficulties associated with implementing such an idealistic approach, and the possible need for clearer definitions of terms such as 'open learning' are readily acknowledged. However, one may argue that in Australia we are at a stage where 'radical' change has now become a part of everyday (conservative) rhetoric. Research and development in the distance education must form the basis of a critical process of change, if change is not to be merely for its own sake. Johnson (1989) maintains that government initiatives have paved the way but it is now up to those working in the field to examine, through research, the issues and concerns which will shape the future of distance education. Such major endeavours must be based on rationale and justification, research and development. What better way to substantiate the need and directions such changes should take than by asking the question: whom is distance education really for? And to answer this question we need to start at the end of the line....

...*the learners*

For those working 'at the coalface' of distance education, the current changes initiated by government may be fundamental in terms of their employment and future prospects on a professional level; for their clients the amalgamations, mergers and restructuring may be merely superficial, cosmetic reshuffling which does little other than add to the bureaucracy, paperwork and cost of participating in higher education. Certainly, forthcoming changes in work practices and professional development in industry may add a broader, if somewhat more captive, clientele, but in view of the greater economic burden being placed on participants of higher education, the clientele is also becoming more discerning in their choice and expectations of education

We might also ask. Has the definition of 'isolation' changed? Has 'mobility' taken on a different meaning? Isolation now might not be *primarily* geographically based. With the current advances in telecommunications technology and the application of networking concepts (Grieg and Hedberg, 1988; Laurillard, 1987) only the occurrence of natural disasters such as hurricanes (which tear down power lines and make satellite communication a little difficult) will prevent at least voice contact between the outer pockets of the nation (or pockets across the ocean) and 'civilization'. That is not to say that the stations of the far Northern territory no longer exist, or that the rainy season no longer blocks access roads for up to months on end in the Queensland outback. They do and it does - but the connotations of the word *isolation* have taken on new substance in recent years.

Isolation can be as much a state of mind as a physical locatedness. Even within urban areas, recognition is now being given to individuals incapable of physical attendance at a tertiary institution - for whatever reason. In essence they are isolated from tertiary education. Into this category might fall people with mobility disabilities or parents whose family commitments prevent them from attending day or evening classes. Similarly the individual who finds the social contact of an on-campus class difficult to cope with, or the learner who simply prefers to work on their own may not be catered for in an on-campus learning mode. Many of us are familiar with the more mature student who finds it difficult to attend on-campus classes because of a lack of confidence after some years away from study, or who is perhaps unduly aware of the age differences between themselves and the majority of their co-students. Such learners might be described as isolated.

Similarly, whereas traditionally 'mobility' referred primarily to itinerant workers and their families, today's meaning might encompass different connotations. People on the move, with much greater demands on time, rather than simply moving base location frequently, for example, people whose employment circumstances may take them away from their homes

for long periods, need to be able to fit study into their mobile lifestyle. In essence, we are witnessing a trend towards a more mobile population in the sense that the workers are changing employment locations more frequently. Whereas lifetime occupations were usual, now people may change professional directions at least once in a lifetime. Similarly, we can recognise factors such as, early retirement, growing trends towards a mature age student population, a decline in the number of 17-19 year olds entering tertiary education, and the notion of lifetime learning. In looking at the question - 'Whom is distance education really for?'- even these general characteristics of the population form important criteria for research to understand the learner.

And then there is the individual learner...

If we take tertiary education as the example, then the individual learners are adults with particular needs and circumstances (Knowles 1984). Those adult learners in tertiary education are often the product of traditional education with all the assumptions that such a form of education encompasses. They are also primarily part-time students, with other commitments, responsibilities and demands on their time and intellect. Also access to study materials may be limited. Let's for a moment look at two short case-studies:

Case 1: Brian

After ten years of working in industry Brian recently gained a promotion in his company. Although he didn't have the formal qualifications the company had in mind, Brian got the promotion because of his experience and expertise. The company decided they would support him in upgrading his qualifications and Brian looked forward to returning to study. Having written to and contacted numerous institutions across Australia for course information over a period of several months - (several requests of which went unanswered by some institutions) he finally found the course which suited his needs and those of the company. (A course available off campus). Living outside the major metropolitan region with no chance of attending on-campus classes on a regular basis because of geographical distance and shift work an off -campus mode was a major priority. The company was so impressed with the proposed course of study that support was to be given in both financial and time release forms, the company meeting the cost of fees and expenses and providing time release for study. The necessary documents, signatures and referee information organized, Brian completed the application and forwarded it by the required date. Too late to contemplate alternate applications as dates for other courses at other institutions closed at the same time, Brian received notification that,

due to budgetry constraints the course was no longer being offered.

So much for returning to higher education! Brian's only option was to enrol for some subjects which he was informed would lead him into a different course - but can a guarantee be given that that course will still be in existence by the time Brian completes the pre-requisite studies?

Jessica in some ways had better luck than Brian - in other ways her experience was even more detrimental to her continuation with higher education.

Case 2: Jessica

Jessica has worked in tertiary education for many years when she decided to upgrade her qualifications. From course descriptions she selected what she believed would be a most interesting off-campus course . Her application was accepted. The enrolment form asked her to make a selection of three subjects for a semester - in case she didn't always get her first choice. The return form indicated that she had been alloted to various subjects - all of which were her last choice - and some of which she didn't really want anyway. With a few reservations she nevertheless embarked on the unit of the first semester. She was a little worried that the emphasis of the unit appeared to focus on primary and secondary classroom based instruction - and wasn't really relevant to her tertiary experience and employment. She completed the first assignment and submitted it. No response. She completed the second assignment and forwarded it. No response. Not knowing how she had fared with the first two assignments she nevertheless completed the third and forwarded it. A few weeks later she received a short note asking her to resubmit the third assignment - otherwise she would fail the unit! At least the note had a contact signature on it. After a few unsuccessful attempts by phone, she finally made contact with someone who appeared to know something about the subject. A short conversation alerted her to the fact that the assumptions of the course were that participants were in daily contact with a class of about 25-30 primary or secondary students, upon which experience they were supposed to base their assignments. Certainly not the two hundred and fifty students with whom Jessica came into contact each week. Unfortunately the date for withdrawal from the course had already passed by this stage. She still maintains that the package of materials she received at the commencement of the course was most impressive, but the lack of human contact and feedback made her feel too isolated. Further if she had known of the assumptions of the unit she would not have enrolled - nor lost the HECS fees she paid in full at the beginning of the course!

It will be some time at least (if and when) before Jessica again contemplates undertaking a course via distance education. Of course, such experiences

are not peculiar to distance education. For the distance education learner however, the lack of adequate information in an appropriate time scale heightens the inadequacies of distance education subscribing to on-campus forms of management and administration.

Jessica's case also highlights the fact that individuals learn differently. Some prefer a great deal of social interaction, others prefer to work in isolation. Some prefer close guidance, others want to 'do their own thing'. Distance education research and development thus has to try and do a balancing act, between the requirements of the learner, the tasks to be completed and the ways and means by which the objectives of both the course and the learner can be achieved. The characteristics and preferences of the learner affect all of the interaction and participation which learners will require during the process of learning, and have direct implications for research into, the design and development of distance education. They are therefore a basic component of the question *'Whom is distance education really for?'*

And to the technology...

One further individual difference which is worth noting in the context of this discussion is derived from the introductory statement in the title of this paper. Although the title can be seen as referring to technology, with the 'line' being the technology link, this interpretation is not necessarily the case. Rather the suggestion is one in which 'line' represents a process, either of design and delivery in the case of institutional development, or success in entering or completing a course in the case of the learner. However, the technological reference raises the issue of technological literacy and it is in this area that many adult learners may face the biggest challenge of their study career. As Hall (1987) reminds us, technological feasibility in distance education is not enough. Research should examine the competency, skills, resources and values of the learners in relation to the applications and expectations of the technology incorporated into course delivery. Similarly, in the application of technology in management and administration, institutions must accommodate individual learner differences in technology literacy and competencies. Research must look 'beyond the screen interface' (Hedberg and McNamara, 1990) in both management and courseware development of technology based materials.

And so to a research agenda...

If we briefly looked at the processes by which courses are currently generated, we might find that the beginning is not necessarily needs-based, but rather starts from a 'good-idea' from a lecturer. Whilst the strength of this

approach should not be underestimated, it is perhaps based more on a personal commitment by staff as to their capabilities rather than to the needs of those for whom the course may be designed. Similarly, the structures and design processes put in place are quite often the result of 'present practices and policies of the institution' rather than because the approach is necessarily the most appropriate for the client, subject or tasks. Course structures often follow the content delivery model, rather than requiring the learner to become actively involved in practical or intellectual discussion, task execution or debate. In other words, content or curriculum forms the basis of design, rather than task or application of the information or a consideration of how the learner may acquire the required skills.

Perhaps in putting the learner at the top of the list the following questions might also be incorporated into a research agenda for research and development in distance education.

For whom is a course designed? On what basis is the course structure, content etc. defined? What learning theories and practices are we incorporating into the design and development? What criteria are critical to the development of this course?

Summary and Conclusions

If we are to look at research and development in distance education we must study all aspects of the phenomena, not merely the economic factors. Despite moves to prioritize development according to financial formulae, we must examine and investigate alternatives which improve learning.

The restrictions of decreasing funding, the growth of a more discerning market and the pressures for the commercialization of education, and one has a recipe for disaster - unless some form of collaboration and a positive plan of research and development action can be formulated. This is perhaps where the implementation of instructional design models would provide a strength and structure which are perhaps currently the exception rather than the rule. And it is within these models that the full implications of the characteristics of the learner and the task can be considered in conjunction with the needs and considerations of the institution. Within such a framework answers to the question *'Whom is distance education really for?'* may be found.

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