Chaos Rules: An Exploration of the Work of Instructional Designers in Distance Education

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Candidate’s Certificate

I certify that the thesis entitled ‘Chaos Rules: An Exploration of the Role of Instructional Designers in Distance Education’, submitted for the degree of Doctor of Philosophy, is the result of my own research, except where otherwise acknowledged, and that this thesis in whole or in part has not been submitted for an award including a higher degree to any other university or institution.

DAVID GEORGE MURPHY

10 May 1995
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ABSTRACT

This thesis provides an examination of the work of instructional designers in distance education, through the conceptual lens of chaos theory. Chaos theory was chosen as an analytical tool because of its ability to reveal the patterns and processes of complex systems as they move between order and turbulence. Recent work in the social sciences, specifically literary theory, has provided impetus for applications of chaos theory to educational settings.

Specifically, chaos theory is used to analyse eight case studies of projects volunteered by instructional designers working in five institutions in Hong Kong and Australia. Data were gathered over a period of months with each participant, chiefly through interviews, but also involving diary accounts, electronic mail and letters. The methodology was thus qualitative, specifically informed by Eisner’s vision of the ‘critical connoisseur’. Eisner equates an ‘enlightened eye’ with attainment of the skills of a critical connoisseur. First, an effective qualitative researcher must develop connoisseurship, the art of appreciation. On its own, though, connoisseurship is not enough; it is a private act, and thus needs a public face or presence. Criticism is this link, criticism being the art of disclosure. The critical connoisseur aims to help others to increase perception and deepen understanding of an educational situation or event.

In addition to the empirical work, a parallel strand of this thesis investigates the theory and reported practice of instructional design. A brief history of instructional design is presented, along with discussion of acknowledged deficiencies of current theory and approaches. Recent reported investigations of both theory and practice are analysed from the viewpoint of chaos theory. Examination of key contributions in the literature of instructional design and distance education reveals considerable resonance between these contributions and the fundamental properties of chaotic systems.

Links are made, in both the theoretical and empirical strands, between instructional design and the behaviour of dissipative structures, attractors and the process of bifurcation. Use is also made of the time-dependent nature of chaos theory as a theory of becoming, rather than one of being.

The thesis comprises eight chapters, two appendices and a references section. The introductory chapter explains the research problem, and outlines the structure of the thesis. Methodological considerations are left until after an assessment of instructional design literature and (reported) practice. This deliberately theoretical investigation (Chapters 2 and 3) comprises the first of the parallel strands that are presented. The basic conclusions are that instructional design theory has not been particularly helpful to or used by instructional designers, and that chaos theory might provide an alternative way of viewing instructional design practice.

The other parallel strand is the empirical work, which for four chapters outlines the methodology and my findings concerning the role of instructional designers in distance education. The methodology is detailed in Chapter 4.
Chapter 5 establishes the contexts of the participants, by examining their backgrounds and introductions to their roles. It also investigates their views on their role and status within their institutions and with working colleagues.

Chapter 6 is an exploration of the major issues that influenced the work of the instructional designers. These are the issues that arose naturally in the interviews as the participants outlined the development and interactions that took place on a day to day basis. Time emerges as a key influence in their work, and its effects on the projects are outlined and analysed. The ways that instructional designers give advice to those with whom they work is also investigated. The next chapter continues consideration of their work, but this time as they reflect on their role and its demands. This includes their reactions to the various metaphors that have appeared in the literature, along with those that they introduced into our discussions.

The links that are established between the two parallel strands are drawn more explicitly in the final chapter, Chapter 8, which is a notion of what a model of instructional design based on my conclusions might resemble. It summarises the evidence that it is not necessarily by striving for order—in fact quite the opposite—during key periods of course development, that leads to creative outcomes. The introduction of uncertainty and turbulence does, in some cases and under some conditions, move the system to a higher level. The image that is offered from chaos theory is that of time-bound dissipative structures, interacting with their open environment at far-from-equilibrium conditions, and transforming themselves from disorder to order through bifurcation. The role of strange or chaotic attractors is highlighted in the process.

The first appendix gives background information in terms of the methodology. The second is the heart of the data upon which the thesis draws. That is, the second appendix outlines the case studies of the participants. Most are short summaries, but the final one is a detailed study, tracing the progress of the design and development of a subject in distance education.
SUMMARY

This thesis explores the practice of instructional design in distance education through the conceptual lens of chaos theory. It does so by analysing eight case studies of specific projects volunteered by instructional designers working in five institutions in Hong Kong and Australia. The methodology was qualitative, specifically informed by Eisner’s vision of the ‘critical connoisseur’. A parallel strand of investigation investigates the theory and reported practice of instructional design, again from the viewpoint of chaos theory.

The thesis comprises eight chapters, two appendices and a references section. After the introductory chapter, there is an assessment of instructional design literature and practice. This theoretical investigation (Chapters 2 and 3) comprises the first of the parallel strands. The basic conclusions are that instructional design theory has not been particularly helpful to or used by instructional designers, and that chaos theory might provide an alternative way of viewing instructional design practice.

The other parallel strand is the empirical work. After a discussion of methodology in Chapter 4, Chapter 5 establishes the contexts of the participants. It also establishes their views on their role and status within their institutions and with working colleagues. Chapter 6 explores the major issues that arose in the interviews as the participants outlined the development and interactions that took place during their projects. The next chapter continues consideration of their work, but this time as they reflected on their role and its demands.

The links between the two parallel strands are drawn together in the final chapter, Chapter 8, which is an outline of what a model of instructional design based on my conclusions might resemble.
Chapter 1

The Research Problem

First, it’s absurd, then maybe, and last, we have known it all along.

William James

Introduction

‘But what do you actually do?’ This is a typical response from someone who has just been introduced to an instructional designer. It is not a surprising question, as the term is neither well-known, nor a particularly apt descriptor of the job. I am an instructional designer, working in distance education, and have had numerous opportunities to explain my role in response to questions similar to that given above. My answers vary, depending upon the inquirer, but usually involve something to the effect that I work alongside lecturing staff and develop self-instructional learning materials for distance education students. However, there are times when I come away from such encounters feeling that I haven’t explained myself very well.

My research has been an attempt to answer the above question. That is, my work has aimed to find out what instructional designers working in distance education ‘actually do’. In attempting this, as instructional designers do not work alone, I have been particularly interested in the relationships between them and those with whom they work, especially academic colleagues. This interest prompted extensions of the basic questions into the areas of how and why instructional designers do their jobs. It also raised questions of how instructional designers cope with, adapt to, and influence the educational systems in which they work.

This research problem has not been as simple or straightforward as it may first appear, for a number of reasons. For example, instructional designers are not always known by that title, and some choose not to be labelled as such (‘educational developer’ has gained popularity, and ‘course developer,’ ‘course designer’ and ‘educational designer’ also exist). Further, instructional design duties can also be subsumed in a job which includes other roles, especially within small distance education institutions. So before the world of instructional
designers can be investigated, it needs to be established exactly what is an instructional designer (indeed, what is instructional design).

My decision to use the term instructional designer, rather than an alternative, was based on a number of factors. First, instructional design has a greater and longer presence in educational literature, as outlined in Chapter 3. Examination of this literature provides the opportunity to trace its evolution, and gauge reasons why some now prefer to use alternatives, such as educational developer. Further, although alternatives are used, no single term has emerged as a clear replacement—the eight participants in my research project, for instance, had five different job titles. The reactions of some of them to the term are found in the empirically based chapters (see, for example, the section on status and role in Chapter 5; pp. 99-106). Thus, in this thesis, the term instructional designer is used in a generic sense. At the same time, its appropriateness is investigated, especially as conceived by the participants.

My own experience led me to believe that instructional designers work in a variety of ways. Some spend considerable effort establishing rapport and a good working relationship with others on a project, while others prefer to maintain a discrete distance. Some like to become intimately involved with the content of learning materials under development, while others prefer to concentrate on issues of process and production. Such variety can also be perceived in the work of some individual designers who change their approaches to their role, depending on the nature of the project and the team of people with whom they are working. Thus, another aim of the research was to confirm or otherwise these conclusions, at the same time probing the issue more deeply.

As originally outlined, the principal areas to be addressed by the investigation were:

The work of the instructional designer. This was an effort to answer the previously posed question, ‘What does an instructional designer do?’ Note that this part of the project was aimed at finding out what instructional designers actually do, and not what they should be doing. As already mentioned, the aims would also include trying to answer the how and why questions, in addition to the what questions. In other words, what are the work practices of instructional designers and what influences and guides those practices, how do instructional designers do their work and accomplish their goals, and why do they work the ways that they do.
The working relationships of instructional designers. The focus of this part was to discover what goes on when an instructional designer works with others in the design and development of distance education materials. What makes a successful relationship between instructional designers and those with whom they work was part of this investigation. This included, of course, discussion of what constitutes success in a professional working relationship. This relationship has also to be seen within the wider context of the system in which it operates. The constraints on the working group, the influences on their work, the patterns of working within the overall educational environment and the ways that problems are overcome are all part of the overall working environment.

So, the thrust of the research was an investigation of the work practices of instructional designers, with particular attention being given to the practices they adopt when working with academic staff in the preparation of distance learning materials.

The purpose of the research was to inform the theory and practice of instructional design within distance education. Consequently, the aim was to produce a thesis which will help to give direction and stimulus to the current confused state of this field of educational endeavour.

Inevitably, these aims were modified and strengthened as my research progressed. That such evolution is a natural and expected aspect of this type of research is further explicated in Chapter 4. A significant change was that the literature review became a major attempt to shift traditional views of instructional design. My growing dissatisfaction with the bulk of instructional design literature was replaced with a resolve to at least make a start on providing alternative approaches to the field, based on my growing interest in chaos theory. The outcome thus consists of two related parallel strands—one being an attempted theoretical ‘reconstruction’ (or even deconstruction) of instructional design, and the other an empirical investigation of instructional designers at work in distance education.

The influence of chaos theory on this thesis is substantial, reflected in its title *Chaos Rules: An Exploration of The Work of Instructional Designers in Distance Education*. This title has a deliberate double meaning. The first meaning of the phrase ‘chaos rules’ is the implication that the working world of instructional
designers is often dominated by chaos, complexity and uncertainty. The second is that instructional designers develop ‘rules’ or ways of working to cope with, adapt to and use chaos constructively in developing distance education courses.

I should add my keen awareness that I am by no means alone in seeking alternative views to instructional design, and to educational technology in general. Detail of the work of others is given in Chapter 3 of the thesis. Further, there is a hint of the postmodern in a previous paragraph, a movement that has found its way into the fabric of educational technology. Aspects of postmodernism are explored in Chapters 2 and 3, particularly as they relate to new and emerging views of instructional design. As outlined by one of its contributors, what

... definitions share in common seems to be a recognition, acknowledgement and acceptance of not just one or two but of multiple world views. If modernism is certainty, post-modernism is uncertainty. ... If modernism provides meta-narratives, then post-modernism provides a disbelief of these. If modernism is singular, post-modern is plural. ...

In educational technology, a post-modern view would challenge monolithic, technical and systematic models of instruction. Post-modern educational technology would see technical, practical, and critical models existing side by side, sometimes contradicting, but often complementing each other. (Hlynka, 1991, p. 517)

Sympathy with these views can be gleaned in much of what follows in this thesis.

First, though, a brief description of my background and orientation provides insight into my approach to the research problem.

**Orientation**

Academically, my early background was in the natural sciences and technology, with major studies in engineering and mathematics. This early concentration on these areas meant that difficulties were experienced when faced with such units as ‘Philosophy of Education’ during Diploma of Education studies. Deficiency in coping easily with such subjects was personally justified as an inability to ‘waffle’, due to overriding strengths in the sciences. A few years later, I retreated to the safe world of mathematics for further study, before deciding to
try something a little ‘heavier’ in education by embarking on Master’s level studies.

At the time of such studies, I was in Australia, working in a Technical and Further Education college with a distance education offering. Moving to Hong Kong gave me a fresh opportunity to implement ideas that I’d been forming over the years, in the development of a Hong Kong tertiary institution’s first distance education course. Although my involvement included helping in setting the administrative structure in place, the bulk of my work was that of an instructional designer, working closely with individuals and groups of academic staff, both local and expatriate.

When I first arrived in Hong Kong, I was becoming increasingly enthusiastic about the newer instructional design theories emanating from the United States, particularly the contributions of Reigeluth, Merrill, Landa and others. The salutary lesson of experience somewhat dimmed my initial enthusiasm, now tempered by reality. Not only are such models and theories difficult to apply in practice, many are based on outmoded, outdated and impoverished views of teaching and learning. This partial disillusionment prompted me to take more notice of other authors in the field, such as Rowntree in the UK, whose work is of a more practical nature.

One personal conclusion was that it is inappropriate and inadvisable to approach instructional design work armed with a single prescriptive theory. An appreciation of such theories, and even application of parts of them, can be necessary, but it is never sufficient. There is much more going on in course design work, especially in the human interactions between instructional designers, lecturing and production staff.

On reflection, I found that I reacted differently to and operated differently with each member of the lecturing staff with whom I worked. For example, some staff responded enthusiastically to the use of concept maps and other devices to help clarify issues of content, while others found them no use at all. Some were quite dependent, and required ‘hand holding’ and plenty of reassurance, while others were independent and competent teachers. Equally, there were those that seemed to want ‘hand holding’ but didn’t need it, and those who behaved independently but required help and guidance (the subjectivity of these judgements is readily acknowledged).
The combined effect of this study and experience made me, I perceive, something of a pragmatist in my work. I find it all but impossible to identify fully with any of the labels that have been attached to instructional designers (for want of a better word) and have struggled for identity in a ‘profession’ (Murphy, 1994) that itself struggles for identity. This is basically what prompted my interest in investigating the world of instructional designers in distance education.

Outline of the research

In undertaking the empirical research work, my basic notion was to follow a number of instructional designers in distance education as they went about their practice. Further, rather than attempt to monitor all aspects of their daily toil, I decided to ask them to allow me to trace the progress of just one project with which each was associated. The research design evolved over a period of months. What emerged was a design that involved a small number of practitioners providing an account of and reflecting upon a particular course design project with which they were associated.

Choices had to be made as to location and level of the practitioners with whom I wished to work. As my preference was for those with whom I could have good access, I initially chose people in close proximity to my employment in Hong Kong. This was especially important in the early days of data gathering, as I wanted to develop the methodology first on a face-to-face basis, before applying it at a distance. My knowledge and experience of distance education in Australia governed my choice for inviting others to join the research. Contact with the first Australian instructional designers was thus by post and telephone, which later came to include personal contact when I moved to Australia midway through data gathering. Similar considerations also led me to restrict the choice to those working in tertiary education settings. As a result, the empirical content of this thesis is based on data gathered from eight instructional designers (three in Hong Kong and five in Australia), all employed in tertiary distance education institutions.

Data were gathered principally by having the participants keep a diary and being interviewed on the basis of their diary accounts. The interview transcripts became the core of the data. My investigation thus emerged as a form of qualitative research, the details of which are provided in Chapter 4.
An assumption was initially made, in reviewing the instructional design literature, that the practice of instructional design was influenced by the models and theories found therein. Though this may seem reasonable, there was at least anecdotal evidence that many instructional designers based their practice on other influences, particularly mainstream educational theory. Somewhat prophetically, I stated in my research proposal that ‘This issue is likely to assume some importance during the life of the research programme’ (Murphy, 1990, p. 8). In fact, it has assumed central importance, as my research progressed and further evidence appeared in the literature. There is now strong evidence that there is little or no congruence between the theory and practice of instructional design. Naturally, this issue is given prominence in Chapter 3.

The structure of the thesis

The flow of the chapters which follow does not necessarily coincide with what might be expected in a traditionally presented thesis. Methodological considerations do not come first—rather, they are left until after an assessment of instructional design literature and (reported) practice, using the conceptual lens of chaos theory. Particular emphasis is given to connections with distance education. This deliberately theoretical investigation (Chapters 2 and 3) comprises the first of the parallel strands that are presented. The basic conclusions are that, as mentioned, instructional design theory has not been particularly helpful to or used by instructional designers, and that chaos theory might provide an alternative way of viewing instructional design practice.

The other parallel strand is the empirical work, the original focus of the research, which for four chapters outlines the methodology and my findings concerning the role of instructional designers in distance education. The methodology employed in my research is essentially qualitative, with particular credence given to the work of Eisner (1991) and his vision of the ‘critical connoisseur’. This is detailed in Chapter 4, along with discussion of my style of writing, also somewhat at odds with more traditional approaches to doctoral dissertations. This also owes much to the exhortations of Eisner, who rightly asks ‘Why take the heart out of the situations we are trying to help readers understand?’ (Eisner, 1991, p. 37)
Chapter 5 establishes the contexts of the participants, by examining their backgrounds and introductions to their roles. It also investigates views on their role and status within their institutions and with their working colleagues.

Chapter 6 is an exploration of the major issues that influenced the work of the instructional designers who allowed me to follow them in the progress of a particular project with which each was involved. These are the issues that arose in the course of the interviews as the participants outlined the development and interactions that took place on a day to day basis. The next chapter continues consideration of their work, but this time as they reflected on their role and its demands. This includes their reactions to the various metaphors that have appeared in the literature, along with those that they introduced into our discussions.

The links that are established between the two parallel strands are drawn more explicitly in the final chapter, Chapter 8, which is a notion of what a model of instructional design based on my conclusions might resemble.

Two appendices are included. The first simply gives background information in terms of the methodology, but the second is far more important, being the heart of the data upon which the thesis draws. That is, the second appendix outlines the case studies of the participants. Most are short summaries, but the final one is a detailed study, tracing the progress of the design and development of a subject in distance education.
Chapter 2

From Chaos To Education

The denial of complexity is the beginning of tyranny.

Anon

Introduction

This chapter introduces the theoretical base upon which the thesis depends. In this and the following chapter, a number of threads are traced and interwoven. One is the historical emergence of chaos theory, along with explanation of its major findings and applications. In particular, the use of chaos theory that has been made by literary theorists will be explored, with a view to identifying approaches of potential application to this thesis. Initial connections that have been made with educational theory and practice will be explored. Chapter 3 takes this discussion and interweaves it with an examination of instructional design literature, including discussion of possible links between chaos theory and the practice of instructional design in distance education.

Chaos emerging

Nearly twenty years ago, some time after I had completed my first degree, I somewhat naïvely entered a postgraduate program in mathematics. One of the coursework units had the intriguing title of ‘Optimisation’, and I duly fronted up to the first lecture with my half dozen or so fellow students. Having been away from mathematics at that level for a few years, initially what was presented on the board made absolutely no sense to me. The symbolism was a totally foreign language, so I simply kept my head down and took notes in the grim hope that by some process of osmosis, it would eventually make some sense.

In time it did. At first it was just vague recognition of symbols, and a sneaking suspicion of what they might represent. The lectures provided an onslaught of largely unintelligible script that was copied down and mulled over at a later
time. After a couple of months, patterns began to emerge, as I perceived pockets of understanding within the predominantly foreign ‘noise’, and I came to realise that we were moving into investigations of certain types of differential equations. They were in fact mostly non-linear differential equations, presented in sets of between three and six at a time.

At no time during the entire course did we attempt to solve the equations—the aim was to model physical phenomena (launching of a rocket, the setting of sails on a yacht) as closely as possible by sets of such equations, sometimes up to eight at a time. The title ‘Optimisation’ meant that the aim was to show how the performance of the phenomena could be optimised. There were a number of reasons for our lack of interest in solutions. One was the enormous computing power that was necessary to solve them, and, anyway, this was the mathematics department, not computing. Another was that the more ‘accurate’ the modelling became, the more complex the equations were, moving into the realm of the above-mentioned non-linear differential equations, which seldom have simple real solutions. In fact, as has been noted (May, 1976; Porush, 1991), such equations have traditionally been left as almost an afterthought in mathematics textbooks on differential equations, as though they were something of an oddity, mistaken as rarities that were not worth spending time on.

I was unaware at the time that someone had been working on the solutions and patterns of non-linear differential equations, in pioneering work on modelling the weather. This was Edward Lorenz, who is acknowledged as among the first to recognise the fundamental properties of chaos theory (Gleick, 1987; Hayles, 1990). With a small set of three equations, Lorenz (1963) had programmed a computer to provide a printout of the solutions, and these appeared as a set of lines much as might appear on the printout of, say, a lie-detector test. Because of the non-linearity of the equations, the pattern varies, without repeating itself, unlike the more familiar patterns of linear equations. Lorenz had completed one run of solutions, and had stopped in the middle of a second run. Rather than start again, he entered the numbers at the middle of the second run, expecting it to follow the pattern of the first, as it had been doing thus far. Not so. At first the lines followed their previous pattern, but quite rapidly they began to diverge, quickly establishing a completely different pattern.

Lorenz soon realised that there was only one explanation for this behaviour; the mid-run numbers. As the printout displayed each number to three digits, these were the numbers he’d entered. However, the computer calculated to six digits,
meaning that there were very slight differences in the numbers as entered by Lorenz. These minute differences were quickly amplified, and soon became so significant as to completely alter the pattern generated by the equations. The implication was that unless the initial conditions of the system could be established with infinite precision, even the slightest change could radically affect the outcome some time later. The implication for the weather and its forecasting was clear: unless current conditions could be measured with infinite precision, any attempt to predict the weather for more than a short period was doomed to failure. This conclusion led to the colourful image that the flap of a butterfly’s wings in Brazil could affect the behaviour of a storm in Chicago (the now famous ‘Butterfly Effect’).

Lorenz continued his investigations of the properties of his model, making initial findings on what have come to be known as strange attractors. The concept of an attractor is quite simple, being a point to which a system is attracted. The example most often quoted is that of a swinging pendulum, which has an attractor at the middle of its swing, because this is where the system comes to rest after some disturbance. Attractors can be more complex, and can be a pattern in themselves, such as the characteristic rhythm of the beating heart. This is the regular cycle to which the heart returns after some disturbance, as long as the disturbance is not too great, which can lead to turbulence and fatal results.

Such attractors can be modeled and graphed. The most interesting results, as far as chaos theory is concerned, occur when plotted as a phase space. This is not like the more usual graphing of, say, the trajectory of a projectile through the air. Rather, a phase space diagram plots velocity against position, thus showing the behaviour of a system at a certain point of time in each cycle. For some systems (such as a simple pendulum), phase space diagrams are straightforward (the simple pendulum produces a circle in phase space), but for Lorenz’s system, the behaviour of the diagram was quite surprising. What emerged was a shape like a pair of butterfly wings, describing orbits that never quite coincided. The orbits had elements of predictability and unpredictability; they were constrained within a certain area, but never repeated the same motion precisely. Because of such behaviour, such attractors became described as ‘strange’, though more recently they have also been termed ‘chaotic attractors’ (Abraham, 1994).

Although strange, these attractors are certainly not rare:
... an astonishing variety of systems can be modeled as strange attractors. For example, they have been shown to describe outbreaks of infectious diseases, variations in cotton prices and in the numbers of lynxes caught by trappers, the rise and fall of the Nile River, and erratic eye movements in schizophrenics. (Hayles, 1990, p. 150)

At this point, as the term ‘chaos theory’ has crept into the discussion, it is worth pausing to state briefly what is meant by the term. Chaos theory gives us a different way to think about our world, a new perspective that is not only comfortable with the idea of turbulence, but also sees it as the natural order of things. As Hayles has succinctly surmised,

Where the eighteenth century saw a clockwork mechanism and the nineteenth century an organic entity, the late twentieth century is likely to see a turbulent flow. The importance of chaos theory does not derive, then, solely from the new theories and techniques it offers. Rather, part of its importance comes from its re-visioning of the world as dynamic and nonlinear, yet predictable in its very unpredictability. (Hayles, 1990, p. 143)

What exactly, though, are we talking about? Chaos theory is the popular name now used to describe ‘the exploration of patterns emerging from apparently random events within a physical or social system’ (Griffiths et al., 1991, p. 432). The term was ‘playfully introduced into mathematics in 1968 (and earlier in the nineteenth century by Ludwig Boltzmann in the context of thermodynamics)’ (Knoespel, 1991, p. 105) and, in fact, is seldom used by theorists and researchers in the physical sciences, where the designation is more usually dynamical systems methods or nonlinear dynamics. At a basic level, the theory claims that, even within ostensibly stable systems (such as a swinging pendulum), chaotic behaviour can be observed, and within systems which seem chaotic, order can arise.

Building up more detail, the world view has been summarised by Hayles as:

The world as chaotics envisions it, then, is rich in unpredictable evolutions, full of complex forms and turbulent flows, characterized by nonlinear relations between causes and effects, and fractured into multiple-length scales that make globalization precarious. (Hayles, 1991, p. 8)
How, then, can chaos theory be envisaged or understood? What sort of relationships between chaos and order does it investigate? Its two fundamental branches have been described thus:

Chaos theory ... can be generally understood as the study of complex systems, in which nonlinear problems ... are considered in their own right, rather than as inconvenient deviations from linearity. Within chaos theory, two general emphases exist. In the first, chaos is seen as order’s precursor and partner, rather than as its opposite. The focus here is on the spontaneous emergence of self-organization from chaos ...

The second branch emphasizes the hidden order that exists within chaotic systems. Chaos in this usage is distinct from true randomness, because it can be shown to contain deeply encoded structures called ‘strange attractors’. Whereas truly random systems show no discernible pattern when they are mapped into phase space, chaotic systems contract to a confined region and trace complex patterns within it. The discovery that chaos possesses deep structures of order is all the more remarkable because of the wide range of systems that demonstrate this behavior. ... The strange-attractor branch differs from the order-out-of-chaos paradigm in its attention to systems that remain chaotic. For them the focus is on the orderly descent into chaos rather than on the organized structures that emerge from chaos. (Hayles, 1990, pp. 9-10)

This is a radically different view of the manner in which physical processes can be modeled, as compared to the traditional Newtonian approach. In Newtonian mechanics, which is still an effective descriptor and predictor of the way that stable macro-systems in equilibrium conditions work, the focus is on individual units (objects, particles, etc.) and their movements and interactions.

The fundamental assumption of chaos theory, by contrast, is that the individual unit does not matter. What does matter are recursive symmetries between different levels of the system. Chaos theory looks for scaling factors and follows the behavior of the system as iterative formulae change incrementally. The regularities of the system emerge not from knowing about individual units but from understanding correspondences across scales of different lengths. It is a systemic approach, emphasizing overall symmetries and the complex interactions between microscale and macroscale levels. (Hayles, 1990, p. 169)

As mentioned, not all chaos theorists are happy to be labelled as such. The problem is not so much as being aligned or identified with a popularised term, but more often at a more fundamental level, due to the misleading implication of the word ‘chaos’.

... the ‘new science of chaos.’ The word is a misnomer; it belongs in scare quotes. Though highly dramatic, to call the phenomena described by the mathematics of chaos chaotic is to stress not what is new but
what has been discarded, for the revolution of so-called chaos is precisely to show that systems that behave in what seemed like random or disordered fashion actually could be described by mathematics. (Porush, 1991, p. 58)

Again, but in slightly less dramatic tone,

Aware of the term’s ambiguity, some mathematicians have added the seemingly contradictory adjective ‘deterministic’ to chaos theory to indicate its limited function. In fact, Prigogine and Mandelbrot avoid using ‘chaos’ in their professional publications. ... The very use of ‘chaos theory’ to denote mathematical research concerned with the analysis of fluctuations in reiterating nonlinear equations marks an intriguing example of the mythification of scientific work. (Knoespel, 1991, pp. 104-5)

Nevertheless, chaos theory survives (Abraham, 1994), and is even spawning related disciplines, such as complexity, sometimes explained as ‘the edge of chaos’ (Waldrop, 1992). Recent publications in this area include the book by Nobel laureate Murray Gell-Mann, who delves into a study of complex adaptive systems, along with quantum mechanics, in his intriguingly titled The Quark and the Jaguar (Gell-Mann, 1994). Journals dealing with aspects of chaos theory have appeared in recent years, a leader being the International Journal of Bifurcation and Chaos, devoted to the study of nonlinear dynamics and complexity, with the fifth volume being published in 1995. The precise relationship between chaos and complexity is difficult to ascertain, for, as Waldrop (1992, p. 9) contends, the latter is ‘so new and so wide-ranging that nobody knows quite how to define it, or even where its boundaries lie.’ This comment hints at the rapidly evolving nature of chaos theory. This evolution is fuelled by a few key centres of research, with the ‘nerve centre’ claimed to be the ‘think tank known as the Santa Fe Institute, which was founded in the mid-1980s’ (Waldrop, 1992, p. 12). The Institute is an eclectic collection of cross-disciplinary researchers, such as Gell-Mann, mentioned above. It has become the focus for scientists who have in some cases worked relatively autonomously for many years with ideas often at odds with their peers (Lewin, 1993). An example is John Holland, who joined the Institute after labouring for decades with the problem of adaptation, culminating in his theory of complex adaptive systems, such as brains or ant colonies in the natural world, or social and cultural systems in the human world (Holland, 1975).
Returning to tracing the development of chaos theory, still focusing on the ‘strange attractor’ branch, a major contribution to the mathematics that helps to explain how seemingly chaotic or disordered phenomena can be modeled similarly came from Feigenbaum (1980). Partly this work built on the findings of Lorenz. That is, he showed that when certain nonlinear functions are iterated (the result of a calculation using the function is fed back into the function to obtain another result, and so on), their behaviour is extremely sensitive to initial conditions (that is, the first set of numbers that are entered). Any small change in the initial values will quickly be magnified, producing radically different results. He took this further, though, with his investigation of their behaviour when plotted in phase space. His surprising result was that different nonlinear functions had similar plots—that is, when iterated, they moved from an ordered state into chaos at the same rate and had the same pattern, known as period doubling.

This was a new way of looking at a certain class of functions, a way of revealing similarities between seemingly different mathematical forms. Revealed was a relationship between recursive levels that occurred in the iterative process, and this became known as recursive symmetry. Although Feigenbaum was working purely with mathematical functions at the time, such functions could be used to model physical phenomena. The phenomena which turned out to be most interesting were those that had largely resisted successful modelling, principally anything that involved turbulence and chaos. Now there was a mathematical tool which could not only reveal patterns within such apparently erratic behaviour, but could also show similar patterns between a range of disparate and ostensibly unrelated physical processes.

For the mathematical functions under consideration, the number of iterations required is quite awesome, and thus it is natural that computers have played a large and significant part in the evolution of chaos theory. At the forefront of discoveries that have captured the public imagination has been Mandelbrot (1983), whose fractal geometry has produced captivating images that seem to cross the boundary of science and art. These images have their origins in the same functions investigated by Lorenz—nonlinear differential equations. Mandelbrot’s significant contribution was to devise ways of displaying the progressive iteration and phase space projection of the functions. This is a creative way of studying mathematics, a more intuitive approach which allows the operator to see the results of variation in the initial conditions (the numbers entered at the start of the iteration) progressively unfold on the computer.
screen. Interest in and investigation of aspects of fractal geometry have continued unabated, illustrated by the recent introduction of an interdisciplinary journal on the complex geometry of nature, *Fractals*, with Mandelbrot as its Honorary Editor.

The fascinating patterns that appear in fractal geometry are more than pretty pictures. For example, they reveal recursive symmetries within functions and their scale dependency. The importance of this scale dependency and its departure from ‘traditional’ mathematics and physics is explained by Hayles:

> Newtonian mechanics and the Euclidean geometry on which it is based are scale-invariant; whether the sides of an isosceles triangle are two centimeters or two kilometers long, the triangle still has the same properties. By contrast, chaotics takes scale into account, recognizing that for complex systems and irregular forms, statements made about one scale level do not necessarily hold true for another. Moreover, it recognizes that couplings between levels are complex and unpredictable. The Newtonian expectation is that small causes lead to small effects, but chaotics looks at systems where minute fluctuations are amplified into dramatic large-scale changes. (Hayles, 1991, p. 7)

An apt analogy that has been used to illustrate the importance of scale is a discussion of a question posed and discussed by Mandelbrot (1983, pp. 25-33):

> How long is the coastline of Britain? The answer to this deceptively simple question is scale dependent, in that it depends on the length of the ruler that is used. If the ruler is a kilometre long, the answer is shorter than if the ruler is one metre long, as the longer ruler ‘cuts across’ irregularities in the shape of the coast. Again, if the ruler is one millimetre long, the answer increases still more. The effect of this decrease in the length of the ruler effectively means that the coastline ever increases. ‘Without specifying a ruler length, the question cannot be accurately answered’ (Hayles, 1989, p. 310).

At roughly the same or a little after the time when the ‘order within chaos’ theorists were pursuing their interests, the other branch of chaos theory was emerging, largely from the work of Ilya Prigogine. His focus is on different but related phenomena, those which exhibit the emergence of order from disorder, or chaos. Such phenomena are called dissipative structures by Prigogine, a Nobel Prize winning thermodynamic scientist. Essentially, dissipative structures are self-organising systems, at far from equilibrium conditions, which transform from chaos to order through a process called bifurcation.
We now know that far from equilibrium, new types of structures may originate spontaneously. In far-from-equilibrium conditions we may have transformation from disorder, from thermal chaos, into order. New dynamic states of matter may originate, states that reflect the interaction of a given system with its surroundings. We have called these new structures dissipative structures to emphasize the constructive role of dissipative processes in their formation. (Prigogine and Stengers, 1984, p. 12)

In proving the existence of such phenomena, Prigogine was also part of a movement towards a new way of looking at physical systems, a departure from classical physics, for his work seems to contradict one of the fundamental laws of physics, the Second Law of Thermodynamics. This law has to do with entropy, the tendency of a system to run down over time. Thus, in a closed system, entropy always increases, the implication for thermodynamics being that entropy is a measure of the heat lost for useful purposes.

Traditionally, there has been a tension between this law and evolution, for example, which seems to operate in the opposite direction. As Porush explains, the ‘contradiction between the thermodynamic and Darwinian cosmologies, between entropy and evolution, has long been recognized’ (Porush, 1991, p. 56). That is, evolution is sign of a system getting more complex, not running down. Part of the traditional explanation is that it doesn’t contradict the law, as it just shows a temporary ‘spark’ in an isolated region of the system as a whole, which is nonetheless, running down (the notion of the ‘heat death’ of the universe).

Taking a stance against this traditional viewpoint that envisions the universe on a path to a temperature stability just above absolute zero, Prigogine and Stengers proffer entropy as a phenomenon ‘driving the world towards increasing complexity rather than death’ (Hayles, 1991, p. 13). This takes place, they claim, in systems far from equilibrium, where high entropy production can help a system to spontaneously self-organise without violating the second law. Isolated examples of such phenomena have been known for some time, and are continuing to be investigated by Prigogine and others.

The mood engendered by Prigogine’s vision is well captured by Porush when he describes the new perspective as:

... a scientific reconciliation between the purer, more rational, microscopic world of particles and forces and entropy with the seemingly unruly macroscopic world that we all experience and inhabit, a world teeming with variety and a confusing array of
complex, interwoven, hungry structures that grow, and grow more complicated, willy nilly, feeding in an open exchange with the world around them. The biosphere is imperialistic and dynamically unstable. ... The macroscopic world is always in process, ... And as we well know, time moves in one direction only. ... We experience a world of timebound dissipative structures, not a world of elegantly predictable mechanical collisions and reversible, symmetric reactions. Any study of this world, Prigogine asserts, requires a science of \textit{becoming}. (Porush, 1991, p. 59)

This description captures much of the essence of what is new in Prigogine’s approach. Of primary concern is the notion of a ‘science of \textit{becoming’}, as opposed to a science of \textit{being}. The question on which Prigogine focuses, then, is ‘the relation between being and becoming, between permanence and change’ (Prigogine and Stengers, 1984, p. 291). Traditional Newtonian mechanics is the prime example of a science of being, wherein interactions between bodies are assumed reversible as far as the mathematics describing the interactions is concerned. The goal of such sciences of being is simplicity, and still fuels much of science in the search, for example, for a unified theory of fundamental physical processes. On the other hand, a science of becoming focuses on complexity and irreversibility; that is, the one-way direction of time, mentioned in the above quote. The unstoppable ‘arrow of time’ is thus at the heart of the Prigogine and Stengers thesis. The explicit implication, in addition, is that this is the world we experience, not the one described by traditional sciences of being.

The fulcrum for the contradictory views of reality is the notion of time. In a classical conception of physical reality, time is reversible, even though this requires a highly idealized version of interactions among dynamic bodies, ... Certainly at the level of our senses, time is irreversible. (Porush, 1991, p. 57)

Although Prigogine and Stengers speculate beyond the scientifically verified aspects of their view, their arguments are compelling, in that they:

insist that since irreversible events are demonstrably part of the world, in fact a much larger part than reversible ones, we must recognize that the view of classical physics is at best incomplete. ... offer a vision that they find both truer to reality and less alienating for the human spirit. The essential change is to see chaos as that which makes order possible. Life arises not in spite but because of dissipative processes that are rich in entropy production. Chaos is the womb of life, not its tomb. (Hayles, 1990, p. 100)

Fundamentally, it is this view of the world that forms the basis for much of this thesis. The arguments later developed rely on a picture of instructional design
in distance education that is based on an open rather than a closed systems environment, a focus on complexity rather than simplicity, the need for a science of becoming rather than a science of being, and a recognition of irreversibility.

This vision is also apparent in the foreword to Prigogine and Stengers’ book, *Order Out of Chaos* (originally entitled *La Nouvelle Alliance* before translation, indicating a newfound relationship between science and the humanities), written by Toffler, who explains:

Most phenomena of interest to us are ... *open* systems, exchanging energy or matter (and, one might add, information) with their environment. Surely biological and social systems are open, which means that the attempt to understand them in mechanistic terms is doomed to failure. This suggests, moreover, that most of reality, instead of being orderly, stable, and equilibril, is seething and bubbling with change, disorder, and process.

In Prigoginian terms, all systems contain subsystems, which are continually ‘fluctuating.’ At times, a single fluctuation or a combination of them may become so powerful, as a result of positive feedback, that it shatters the preexisting organization. At this revolutionary moment—the authors call it a ‘singular moment’ or a ‘bifurcation point’—it is inherently impossible to determine in advance which direction change will take: whether the system will disintegrate into ‘chaos’ or leap to a new, more differentiated, higher level of ‘order’ or organization, which they call a ‘dissipative structure.’ (Such physical or chemical structures are termed dissipative because, compared with the simpler structures they replace, they require more energy to sustain them.) (Toffler, 1984, p. xv)

At this point it is worth considering how Prigogine and Stengers discuss the remarkable behaviour of dissipative structures, and the processes whereby systems at far-from-equilibrium move to altered states at a higher degree of order.

The problem of the stability of a system vis-a-vis this kind of change may be formulated as follows: the new constituents, introduced in small quantities, lead to a new set of reactions among the system’s components. This new set of reactions then enters into competition with the system’s previous mode of functioning. If the system is ‘structurally stable’ as far as this intrusion is concerned, the new mode of functioning will be unable to establish itself and the ‘innovators’ will not survive. If, however, the structural fluctuation successfully imposes itself—if, for example, the kinetics whereby the ‘innovators’ multiply is fast enough for the latter to invade the system instead of being destroyed—the whole system will adopt a new mode of functioning: its activity will be governed by a new ‘syntax’. (Prigogine and Stengers, 1984, pp. 189-90)
It is easy to interpret what is discussed here as the kind of activity that takes place within social structures, such as educational institutions. What is particularly fascinating is that what is being discussed here are chemical processes, specifically certain types of polymerization. The behaviour of such processes can be at times almost bizarre, as though the molecules have the ability to communicate. Such conclusions might well be ridiculed, were it not that the chemical reactions can be observed, and that the interpretation is made by a recognised first rate scientist. Examples of the chemical reactions discussed by Prigogine are for the most part well known by chemists, such as the Belousov-Zhabotinsky reaction, which in some conditions gives rise to a chemical clock (Prigogine and Stengers, 1984, pp. 152-3). The radical interpretation includes the following bold claim:

Such a degree of order stemming from the activity of billions of molecules seems incredible, and indeed, if chemical clocks had not been observed, no one would believe that such a process is possible. ... molecules must have a way to ‘communicate.’ The system has to act as a whole. (Prigogine and Stengers, 1984, p. 148)

Finishing off consideration of the order-out-of-chaos branch, as far as the practicability of Prigogine’s work is concerned;

Prigogine’s model has been applied to a number of familiar, even mundane phenomena, from social and biological evolution, to genetic morphology, to tidal action on geological formations, to social divisions in ant colonies, to tribal ritual transactions, to population dynamics, to the invention of cities, to the progress of international science policy, to consumer choices in an open market, to the action of cortical neurons, and most recently, to the spontaneous formation of paired subatomic particles out of a quantum vacuum by electrons. (Porush, 1991, pp. 61-2)

Although chaos theory has thus far been described in terms of two disparate approaches, they do, not surprisingly, share many features (Hayles, 1990, pp. 11-4). The common features are of much greater significance than the differences between the two branches. These tend to more a matter of difference in focus, the strange attractor branch focusing on order within chaos, and the dissipative structure branch giving attention to order out of chaos.

The sensitivity to initial conditions of chaotic systems, introduced at the start of this section, is a fundamental feature of the two branches. The consequent characteristic of nonlinearity, whereby large effects can be brought about by
small causes, is also found in each. Scale dependency, through the existence of complex forms, is another point of similarity. This phenomenon, with the emergence of fractal geometry, has important ramifications for both approaches. As well, both depart from traditional focus on study of the behaviour of individual particles or units, to concentrate on recursive symmetries between scale levels, a vision of turbulence within turbulence within turbulence, and so on through many levels. The approach to feedback mechanisms is also common, an iterative process by which the output of one cycle is fed back as input to the next cycle, leading to movement between chaotic and ordered behaviour via fluctuations and bifurcations.

For this thesis, then, it is important to establish the existence of such features in the working world of instructional designers in distance education. Only then can the implications for theory and practice be explored. Thus, in presenting the empirical evidence, in Chapters 5 to 7, incidents and ideas which are congruent to the fundamental features of chaotic systems will be identified, leading to consideration of the implications in the final chapter.

Arising from a combination of the common features is the overall sense of a movement from global to local theorising. That it is a necessary outcome of chaotic behaviour is explained by Weissert thus:

Global theories define the behavior for all locations within the system. Only recently have local theories been developed—thories which define behavior rules for isolated local regions within the larger system. The spontaneous appearance of islands of order from a sea of chaos illustrates why local theories are necessary. ... Throughout the history of Western science, theorists automatically formulated their theories to explain phenomena universally. One of the crucial assumptions underlying universal theories is that contiguous parts of the system behave similarly. However, the behavior of nonlinear dynamical systems violates this assumption. As scientists began to study these systems more closely, they observed radically different behavior among nearby parts of the system—i.e., when they started with slightly different initial conditions, very different behavior resulted. (Weissert, 1991, p. 232)
Thus we have rather curious and seemingly contradictory connections between
global and local views. On the one hand, small perturbations at a local site can
have global implications for the system, while on the other we cannot theorise
globally because of radically different behaviour at localised sites. This has led,
not surprisingly, to apparent confusion in the literature, with some claiming the
death of universal theories and others looking at new conceptions of globalised
thinking.

As Chieuw explains:

A dynamic system is one in which the components are related and
interlock with one another such that a change in one component
invariably affects another part of the system, or eventually even the
entire system. As a result, there is uneven, asymmetrical and
discontinuous development throughout the parts or components of the
system. (Chieuw, 1991, p. 25)

Hayles discusses this even more emphatically, stressing the new perspective
that needs to be adopted in facing local versus global considerations:

It is important to understand that chaos theory does not renounce
globalization. Rather, chaos theory achieves globalization in a different
way, by correlating movements from one level to another. (Hayles,
1990, p. 211)

As well as reiterating the point introduced above concerning the vagaries of
cause and effect relationships within a chaotic system, she emphasises that:

The distinction between the classical and new paradigms is not, then,
that one globalizes and the other does not, but that one is scale-
invariant and the other is not. ... Quantum mechanics and the special
theory of relativity thus introduced scale considerations—but only for
the very small and the very fast. Chaos theory, by contrast, teaches that
scale is generally important for complex systems, even at non-relativistic
speeds and for macroscopic dimensions. (Hayles, 1990, p. 211)

A comment by Hayles on this issue provides a final word on the issue of
localisation versus globalisation, at the same time providing a link to the next
section:

The science of chaos shares with other postmoderns a deeply ingrained
ambivalence toward totalizing structures. On the one hand, it
celebrates the disorder that earlier scientists ignored or disdained,
seeing turbulent flow not as an obstacle to scientific progress but as a
great swirling river of information that rescues the world from sterile
repetition. On the other hand, it also shows that when one focuses on
the underlying recursive symmetries, the deep structures underlying chaos can be revealed and analytical solutions can sometimes be achieved. It is thus like other postmodernisms in that it both resists and contributes to globalizing structures. (Hayles, 1990, p. 291)

Chaos, postmodernism and literary theory

In the humanities, the most penetrating progress with respect to chaos theory and its applications has come from literary theorists, particularly those aligned with postmodernism and poststructuralism, especially deconstruction, with the focus on links with society and culture. At the forefront of this work is a person whose name has already appeared frequently in this thesis, Katherine Hayles, whose unusual academic background in both literary theory and thermodynamics has placed her in a strong position to make a significant impact on the field. Her major contributions have come with the publishing of a tantalisingly titled text *Chaos Bound: Orderly Disorder in Contemporary Literature and Science* (Hayles, 1990) and an edited text *Chaos and Order: Complex Dynamics in Literature and Science* (Hayles, 1991).

That the challenge from literary theorists to science is no easy task is readily acknowledged by Hayles, who appeals strongly against the ‘myth’ of scientific objectivity. As she explains, the approach that she and her collaborators present... articulates chaos theory together with developments in the human sciences and postmodern culture. Such an approach implies, of course, that the science of chaos is part of the culture, and that scientists, like everyone else, are affected by the culture in which they are immersed. Yet so strong is the ideology of scientific objectivity that practitioners and laymen alike often speak as if scientists were hermetically sealed within the laboratory, isolated from and immune to the thousands of experiences that constitute the fabric of everyday life. (Hayles, 1991, p. 4)

Surprisingly (even to some chaos scientists) comes the claim from Hayles and others that chaotic concepts were discovered and articulated in literature either concurrently with (Porush, 1991) or even before (Weissert, 1991) science. This comes as nothing new to some literary theorists (Serres, 1975), who believe that scientists often trail great literature in the discovery of scientific truth. And viewed from a cultural perspective, it becomes a sensible proposition.
... if we can conceptualize the complex dynamics of culture as a fluid system in which each of the disciplines is a current of information, we could easily understand how the situation described by Serres could arise. These currents are not isolated but are constantly intermixing their ideas in a process which could only be described as stochastic. ... Because people are influenced by the representations of their society, no discipline can remain isolated. Thus an idea or structure may arise in literature first before it makes its way into scientific formulism. But it might also be the case that a scientific theory influences a work of literature. With this model, all the interesting dynamic structures of liquids come into metaphorical play: eddies, flows, bifurcations, feedback loops, mixing, and, of course, the most interesting feature of all, turbulence. In cultural dynamics, as in hydrodynamics, linearity must be abandoned because the flow of ideas is clearly nonlinear. (Weissert, 1991, p. 224)

... scientific theories and models are culturally conditioned, partaking of and rooted in assumptions that can be found at multiple sites throughout the culture. (Hayles, 1990, p. xi)

The dynamics of the situation can be well illustrated with reference to history. The profound influences between, for example, evolutionary theory and society and culture are well known. Twentieth century examples include the eddies, flows and turbulence of Einstein’s work on relativity, as well as other more modern scientific notions, with terms like ‘quantum’ creeping into popular discourse. What is interesting is that, for example, quantum mechanics is restricted to the world of the infinitesimal, yet that has not prevented the almost universal application of quantum notions (for example, the proverbial ‘quantum leap’) to macroscopic phenomena, along with other scientifically ‘misused’ terms, such as ‘critical mass’.

When we come to chaos theory, though, we are dealing with the world of our common senses. It should thus not surprise us that literature, with its more uninhibited approach to the introduction of ideas, should have considered chaotic notions before science. It can also respond more quickly to changing cultural influences.

When it comes to the kind of complex, unpredictable behavior typical of nonlinear systems, literature has a longer history of dealing with it and is more suited to describe its complexities than science. (Hayles, 1991, p. 21)

... though there may be no direct influence between Prigogine [in science] and Marshall [in literature], both are responding, partly unconsciously, to a larger ‘postmodern condition’ or paradigm which influences the way we see natural and human systems ordering themselves. (Porush, 1991, p. 76)
What, though, does chaos theory have to offer literary criticism? What new tool has it provided literary theorists in their deliberations? One answer is that it has opened opportunities for new exploration of the correspondences between literature and science, both in the metaphorical and literal senses. Another is the tool it offers for reexamination and reappraisal of texts through a new conceptual lens, ‘texts that were written before the new paradigm coalesced to excavate in them possibilities and potentialities that resonate with the postmodern moment’ (Hayles, 1991, p. 19).

... because Prigogine’s model challenges classical science’s assumption about the locale of reality, it also indicts the insufficiency of classical science’s discourse about reality. As such, it is part of postmodernism’s three-pronged attack on classical science discourse. (Porush, 1991, p. 60)

Prigogine himself readily espouses the crossover from his ideas in the scientific realm to our social world. As he and Stengers see it,

It is remarkable that near-bifurcations systems present large fluctuations. Such systems seem to ‘hesitate’ among various possible directions of evolution, and the famous law of large numbers [basically that in a large system, fluctuations can be ignored] in its usual sense breaks down. A small fluctuation may start an entirely new evolution that will drastically change the whole behavior of the macroscopic system. The analogy with social phenomena, even with history, is inescapable. Far from opposing ‘chance’ and ‘necessity’, we now see both aspects as essential in the description of non-linear systems far from equilibrium. (Prigogine and Stengers, 1984, p. 14)

It is thus with little difficulty that literary theorists have developed links with chaos theory. Equally, the focus of this thesis is on essentially social phenomena, making it suitable ground for application of chaotic concepts through an ‘inescapably’ analogous situation. An aim of the analysis is, then, to prove these links and investigate what happens in ‘far from equilibrium’ conditions as they may exist in the working world of an instructional designer in distance education.

The excitement with which literary theorists within the postmodern stream have grasped chaotic concepts and used them in textual analysis is clearly evident and confidently espoused by the claim that:

... fictional discourse in general may best express the various syntheses implied by Prigogine’s theories. From this point of view, any text can
now be seen as a ‘biosocial phenomenon’, subject to the same laws that
govern certain naturally occurring phenomena (dissipative structures).
In this argument, fiction begins with two advantages over other
‘biosocial phenomena.’ First, novels describe the world of our senses,
the reality of the macroscopic world on which Prigogine’s description
of nature places new emphasis. Second, Prigogine challenges the
veracity of classical science’s descriptions of a rational nature. As a
consequence, fiction in general—and postmodern fiction in
particular—emerges as a powerful alternative mode of epistemological
discourse that captures a reality forbidden to science by virtue of its

This enthusiasm to apply new tools which simultaneously question the veracity
of previously held assumptions (both explicit and implicit) is also well apparent
in the discourse.

... even a casual observer of academic frontiers registers a shift from an
unquestioned faith in the consistency of metaphysical systems and
mathematical logic to a hypercritical expectation that perturbations
may be detected in all systems of thought. Where critical inquiry
previously assumed stability, it now explores instability and confronts
complexity previously unchallenged or simply unseen. (Knoespel,
1991, p. 100)

Allied to this is the ready acceptance of a symmetry between chaos theory and
deconstruction. While acknowledging and articulating the real and significant
differences between the two, Knoespel (1991) nevertheless explains how

... we may understand the important affinity between deconstruction
and mathematics. Both presume a continuous proliferation. By
articulating disorder, by decentering what appears as a privileged text,
chaos theory and deconstruction intervene to make us aware of other
forms of order. Just as chaos theory seeks to define order which has
hitherto remained undecipherable, deconstruction exposes experience
which has been ‘ignored in order to preserve the illusion of truth as
perfectly self-contained and self-sufficient presence’. (Knoespel, 1991,
p. 116)

Particular aspects of chaos theory also find resonance among critical literary
theorists. Of especial import is the sympathy between the chaotic viewpoint of
local theories and congruent notions within postmodernism.

The newly discovered sensitive dependence on initial conditions,
because it defies an important assumption of global theories, forces
theorists to develop theories that can account for localized behavior.
The turn away from global theories and concentration on local ones
could be interpreted as a major shift. Whereas global theorizing is
associated with the textual closure and unity often associated with
modernism, local theories are analogous to recognizing intertextuality
and abandoning a forced textual unity. This aspect of chaos theory is postmodern. (Weissert, 1991, p. 232)

How specifically, though, do literary theorists use chaos in their analysis? One particularly clear example is found in a re-reading of a particular text by Porush (1991), who explicitly links the structure and episodes within the fictional text (Roadshow, written by William Marshall in 1985) to the principal features of Prigogine’s work. The fictional work is cited as an example of a postmodern novel, emphasising its significant variation in style with the traditional, ‘closed system’ text, wherein all necessary information is present, and problems, mysteries and questions are eventually solved.

As an alternative, Porush analyses Roadshow as a dissipative structure arising in an open system, using this as a starting point for striking parallels to be drawn between text and chaos theory. Noting that ‘Prigogine himself remarks that social phenomena are best described by nonlinear equations, especially when they are kept far from equilibrium or can be described as such’ (Porush, 1991, p. 70), nonlinear fluctuations at far-from-equilibrium conditions are identified as the essence of the tale. The crucial aspects of self-organisation and irreversibility are introduced, as Porush finds ‘series of disconnected fragments which gradually grow more intertwined, related and organized ... The forward movement of time is crucial ...’ (Porush, 1991, p. 71). Explicit examples of sensitive dependence on initial conditions, bifurcation points and attractors are also explored. The actions and motivations within the text are also exposed as examples of holographic phenomena, in line with the importance of the relationship between part and whole. Finally, we are told that:

the pleasing qualities of this novel, as with many other novels, its intrigue and complexity and dark humor, arise from a vision of a larger social system that exists through a fragile and harsh conspiracy between the forces of order and the forces of disorder. ... order arises out of disorder on three levels: a world-circling traffic jam organizes itself spontaneously; the befuddled detectives solve the mystery of who is behind the plot; and the narrative itself becomes more systematically ordered according to the events it portrays. (Porush, 1991, p. 73)

Porush stops short of unambiguously claiming that the novel he describes is a dissipative structure in more than a metaphorical sense, but interestingly links his analysis to specific work of Prigogine, wherein a traffic jam is analysed as a literal dissipative structure.
Some literary theorists have thus taken on chaos theory with relish, and are applying it in bold, imaginative and mostly convincing ways to the analysis of text, particularly the postmodern. In doing so, they inspire others to take their lead, and provide a model for those in the social sciences to follow. In particular, they have provided me with intermediary tools between chaos theory and the aims of my research. For example, the manner in which Porush revisits a text through the conceptual lens of chaos theory has led me to consider previously published accounts of the design and development of distance education materials in a similar manner. Thus, in the next chapter, analysis of previous research includes, in some cases, fresh interpretation in the light of chaotic concepts. For the remainder of this chapter, though, consideration is made of the inroads that chaos theory has made in educational theorising and research.

**Chaos theory and education**

In recent years, possible applications of chaos theory to education have been posited. It is not difficult, for example, to imagine the existence of the Butterfly Effect in the classroom. The presentation to a primary class of a particularly interesting ‘show and tell’ item might well lead to protracted class discussion and major project work for the whole group, or even the entire school. Another example might be the student who has a small misunderstanding of the subtraction algorithm early in primary school, becomes disillusioned and later has considerable difficulties with mathematics. Or, similarly, for two students, ... minuscule differences in mathematical knowledge between Lionel and a classmate at the beginning of the school year may lead to quite large, unpredictable differences in achievement between the two students by year end. (Cziko, 1989, p. 19)

Cziko’s observations were part of a larger argument concerning unpredictability and indeterminism in human behaviour, and the implications for educational research. Using arguments from a number of perspectives, including chaos theory, the unpredictability of human behaviour, individual differences and consciousness and free will, Cziko concludes that the most fruitful studies will come from descriptive and interpretive work, rather than the use of a classical scientific approach (Cziko, 1989, p. 24).

Sawada and Caley (1985) have theorised about dissipative structures and the process of bifurcation as a means for understanding the emergence of creativity
in education, while Doll (1986; 1987) has argued the application of dissipative structures as a foundation for a postmodern curriculum. His line of reasoning is basically the same as is pursued in this thesis. Doll perceives that curriculum theory has been hampered by its roots in and continued adherence to a Newtonian, classical scientific paradigm, leading to fundamental misunderstanding of the works of Dewey and Piaget, for example. Curriculum studies has thus been dominated by the ‘measured curriculum’ (Doll, 1986), a product of technical rationality and reductionism. A new educational model is required, one that:

would be a transformative curriculum, with the individual and his or her structures or levels of understanding being transformed. Such a change would be internal and include disequilibrium as a prime motivator, as well as the opportunity for self-regulation to work. (Doll, 1986, p. 14)

The implications for teaching and learning are further explicated:

The teacher must intentionally cause enough chaos to motivate the student to reorganize. ... Too much chaos will lead to disruption ..., while too little chaos will produce no reorganization. ... Because no preset formula can tell a teacher what this will be for individual students, teaching becomes an art. ... curricula need to be teacher manipulated, not teacher proofed.

Underlying both internality and disequilibrium (leading to reequilibrium at a higher plane) is the notion or belief in self-regulation. The measured curriculum with its emphasis on the set and the predetermined finds this idea of internal regulation an anathema and an absurdity. Yet it forms the foundation of Dewey’s concept of interest, Piaget’s concept of construction, Bruner’s concept of competence, and Prigogine’s concept of transformatory change. Prigogine and Stengers (1984) discuss self-regulation in terms of ‘spontaneous reorganization’ when a critical point has been reached (p. 165). This critical point varies from individual to individual, is not predictable, and needs both internal development and disequilibrium to be effective. At this critical point (termed ‘bifurcation’ by Prigogine) various pathways of development are possible. Which one occurs will depend on how the individual interacts with the recognized perturbations. The teacher’s task then changes from presenting perturbations to supporting reconstructions in a cooperative and caring way. (Doll, 1986, p. 16)

Doll’s presentation, especially the ways that he relates the discussion of postmodernism to the ideas of educational theorists such as Piaget, Bruner and Schön, thus makes for stimulating reading. His description of a postmodern curriculum clearly attempts to use the key concept of dissipative structures from chaos theory:
... there must be, as Dewey realised, a sense of indecision and indeterminacy to curriculum planning. The ends perceived are not so much ends as beginnings; they represent ends-in-view, or beacons, which act as guides before the curriculum implementation process begins. But once the course develops its own ethos, these ends are themselves part of the transformation; they, too, along with the students, the teacher, the course material, undergo transformation. ... Here curriculum becomes a process of development rather than a body of knowledge to be covered or learned, ends become beacons guiding this process, and the course itself transforms the indeterminate into the determinate. (Doll, 1987, pp. 19-20)

Others, including Bobner et al. (1989) and Sawada and Pothier (1988), have urged educational researchers to investigate new perspectives and new models suggested by chaos theory. Bobner et al. (1989) provide a broad sweep of possibilities of chaos modelling within education, ranging from individual brain function, through classroom dynamics and district systems. Sawada and Pothier (1988) posit that the theory of dissipative structures provides the gateway to new methodologies that transcend the traditional distinction between qualitative and quantitative research.

A strong claim that has been made is that the principles concerning dissipative structures may not be just similar between the natural and social sciences; they might just be the same (Sungaila, 1990). That is,

the challenge is not to treat educational systems, by way of analogy, as if they were dissipative structures, but to consider what difference it would make ... if educational systems really are dissipative structures, characteristically self-renewing and self-organising. (Sungaila, 1990, p. 9)

The principles of self-renewal and self-organisation mentioned here are essentially one of the foundations of chaos theory; the idea of order through fluctuation. The fluctuations within an open system at, necessarily, far-from-equilibrium conditions, become such that they push the system to a new and qualitatively different existence.

A more extensive analysis of chaos theory and its possible applications to education is found in Chieuw (1991), whose doctoral thesis was a theoretical study of educational planning from a dynamic systems perspective. On the premise that traditional planning by and large views social systems as orderly and predictable, following linear patterns of change, Chieuw challenged these claims and proposed a model:
based on an alternative knowledge base of systems as open, complex, and far-from-equilibrium, the environment as turbulent, system behavior as dynamic, and change consequently as unpredictable ...
(Chieuw, 1991, p. xi)

The resulting view of educational systems is one in which chaos plays a positive role, especially with respect to the role of positive feedback. As Chieuw explains, research into dynamic systems has shown that:

(1) chaotic system behavior in response to changing environmental conditions allows for survival; (2) and that systems that are chaotic, rather than those that are regular and orderly, are healthy, creative systems. Chaos, defined as local randomness and variability confined within a structured, global pattern, is increasingly understood as a healthy system dynamic capable of responding to changing conditions in the environment. ...
The implication of dynamic, chaotic systems are that they are better able to withstand environmental turbulence ... (Chieuw, 1991, pp. 88-9)

An attempt is made to explore the implications of this view for educational planning, including the notion that planning should foster and encourage the type of system behaviour that tolerates or even encourages chaotic structures. The point is also made that recognition of the system as complex does not mean that planning has to be more complex. On the contrary, the application of simple iterative procedures and processes can lead to the desired chaotic state that can be the driving force for system growth and movement to higher levels of operation (Chieuw, 1991). Quite what this iterative approach entails in detail is, however, not fully explored, although an attempt is made to link chaos models to cybernetic theory and to an existing strategic planning model that most closely relates to the thrust of the thesis.

A possibly fruitful area of research to inform research on educational systems is the earlier mentioned (see p. 14) emerging science of complexity, part of chaos theory’s continuing evolution. Specifically, parallels might be drawn between educational systems and ‘complex adaptive systems.’ The word complex is used here ‘in the sense that a great many independent agents are interacting with each other in a great many ways’ (Waldrop, 1992, p. 11). The manner in which the interactions operate, along with the consequences, is described thus:

The richness of ... interactions allows the system as a whole to undergo spontaneous self-organization. ... groups of agents seeking mutual accommodation and self-consistency somehow manage to transcend themselves, acquiring
collective properties such as life, thought, and purpose that they might never have possessed individually. Furthermore, these complex, self-organizing systems are adaptive, in that they don’t just passively respond to events ... They actively try to turn whatever happens to their advantage. ... every one of these complex, self-organizing, adaptive systems possesses a kind of dynamism that makes them qualitatively different from static objects such as computer chips or snowflakes, which are merely complicated. ... all these complex systems have somehow acquired the ability to bring order and chaos into a special kind of balance. This balance point—often called the edge of chaos—is where the components of a system never quite lock into place, and yet never quite dissolve into turbulence, either. ... The edge of chaos is the constantly shifting battle zone between stagnation and anarchy, the one place where a complex system can be spontaneous, adaptive, and alive. (Waldrop, 1992, pp. 11-12)

It is this final state of life and spontaneity to which an educational system might aspire in order to prosper and create effective learning environments for its students. Links can also be ascertained from the above with dissipative structures, especially with respect to self-organising ability. What specifically, though, are the properties of complex adaptive systems that make a connection to educational systems appropriate?

The first property is that:

... each of these systems is a network of many ‘agents’ acting in parallel. ... each agent finds itself in an environment produced by its interactions with the other agents in the system. It is constantly acting and reacting to what the other agents are doing. And because of that, essentially nothing in its environment is fixed. ... the control of a complex adaptive system tends to be highly dispersed. ... If there is to be any coherent behaviour in the system, it has to arise from competition and cooperation among the agents themselves. (Waldrop, 1992, p. 145)

In the case of educational systems, the people within it are the ‘agents’, interacting with each other in a variety of ways and at a variety of levels. This relates to the second property, whereby:

... a complex adaptive system has many levels of organization, with agents at any one level serving as the building blocks for agents at a higher level. ... complex adaptive systems are constantly revising and rearranging their building blocks as they gain experience. ... all these processes of learning, evolution and adaptation are the same. And one of the fundamental mechanisms of adaptation in any
given system is this revision and recombination of the building blocks. (Waldrop, 1992, p. 145-6)

The intriguing third property relates to the ability of the complex adaptive system to anticipate and predict the future.

... every complex adaptive system is constantly making predictions based on its various internal models of the world—its implicit or explicit assumptions about the way things are out there. ... these models ... can come to life in a given situation and ‘execute’, producing behavior in the system. ... you can think of internal models as the building blocks of behavior. ... they can be tested, refined, and rearranged as the system gains experience. (Waldrop, 1992, p. 146)

This property helps to partly explain the seeming ability of systems and organisations to operate without firm direction or policy, almost as if they had a ‘life’ of their own. This has links to the Gaia hypothesis, discussed in Chapter 8 (see p. 197).

The final property relates to the notion of equilibrium and its undesirability for the system to survive and evolve.

... complex adaptive systems typically have many niches, each one of which can be exploited by an agent adapted to fill that niche. ... Moreover, the very act of filling one niche opens up more niches ... So new opportunities are always being created by the system. And that, in turn, means that it’s essentially meaningless to talk about a complex adaptive system being in equilibrium: the system never gets there. It is always unfolding, always in transition. In fact, if the system ever does reach equilibrium, it isn’t just stable. It’s dead. ... the agents in the system ... have no practical way of finding the optimum. The most they can ever do is to change and improve themselves relative to what the other agents are doing. In short, complex adaptive systems are characterized by perpetual novelty. (Waldrop, 1992, p. 147)

The necessity for an educational system to seek change and improvement, and avoid equilibrium, is the clear implication of this property.

The work described so far has been almost purely speculative and theoretical. What about empirical research on chaos theory within education? Some tentative work has begun, but without conclusive result. Part of the problem is that chaos theory has made the most rapid progress in the physical sciences, where quantitative data can most readily be analysed, mathematical proofs reign, and computers allow chaotic systems to be investigated. The qualitative
nature of much research in the social sciences, especially education, makes strict application of chaos theory problematic.

An example is provided by Griffiths et al. (1991), who have used chaotic systems concepts to analyse a case study in educational administration. They rightly point to the work of Hayles (1990) as the most helpful to scholars working in education, and attempt to apply her ideas in their analysis. Although, as they readily admit, their results are certainly not conclusive, their ‘quick and dirty’ case analysis ‘left us less than sanguine about its potential, unless applicable precepts guide research design, data gathering, and analysis’ (Griffiths et al., 1991, p. 448). Their skepticism concerning quantitative analysis was tempered, however, with hope concerning the potential intuitive and explanatory value of chaos theory for research issues.

So what does this picture of the influence of chaos theory in education reveal? Essentially, it reveals a disparate array of theorists and researchers attempting to engage with and apply new and innovative ideas and models to the whole gamut of educational practice. Much of the work is tentative, but it has a growing momentum, building on the strength of alternative paradigms and methodologies emerging in educational research.

For me personally, it provides me with stimulation for further investigation and theorising, and an alternative conceptual lens with which to view my own educational experience. For, when faced with the chaotic turbulence of ‘Optimisation’ in my postgraduate mathematical study so many years ago, were my learning processes acting like a dissipative structure? Faced with an ocean of chaos, was I slowly able to locate islands of order, that grew and gradually linked through a series of iterations or bifurcations as I went through cycles of attendance at lectures followed by periods of reflection? Does much of theorising in education need to change focus to concentrate on ‘becoming’, rather than ‘being’? These and similar questions and views have been discussed in the literature (Bobner et al., 1989; Cziko, 1989; Sawada and Caley, 1985), and may soon become a part of more mainstream thinking.

For this thesis, the conceptual lens of chaos theory provides an opportunity for an alternative approach to the study of the theory and practice of instructional design, particularly within my area of research within distance education. The following chapter will focus on the implications of chaotic concepts for instructional design theory. The ideas investigated there are then used to inform
the analysis of the empirical results of my research, in Chapters 5 to 7. This is preceded by a consideration of methodology in Chapter 4.
Chapter 3

Instructional Design: From Order to Chaos

Instructional design – the art and science of crafting effective learning environments.

David Murphy

Introduction

The aim of this chapter is to locate the theory and practice of instructional design within the framework of chaos theory. This will be done by a number of approaches, within two overarching strategies: to demonstrate how instructional design theory has paralleled developments in science and the humanities, and to show how the practice of instructional design can be viewed through the ‘conceptual lens’ of chaos theory.

Another thread is an outline of instructional design theory, from its behaviourist roots just after the Second World War to the multitude of approaches now espoused in the literature. These threads are then integrated, demonstrating the explicit and implicit links between chaos theory and instructional design, along with evidence from the literature to support these claims.

Instructional design history – from certainty to chaos

The focus now shifts to instructional design, tracing its development from its post-war emergence to the present. Its major features and contributors will be discussed, both from a theoretical and practical perspective. It is conjectured that both perspectives show strong evidence of a growing recognition of ‘ways of knowing’ that fit closely with chaotic concepts.
Instructional design theory

Instructional design purports to be the long-awaited (Dewey, 1900) link between learning theory and educational practice. As Reigeluth (1983, p. 5) claims:

> Instructional design is this linking science—a body of knowledge that prescribes instructional actions to optimize desired instructional outcomes, such as achievement and effect.

Some descriptions and definitions of instructional design include:

> ...the entire process of analysis of learning needs and goals and the development of a delivery system to meet the needs. (Briggs, 1977, p. xx)

> ...the systematic design of instruction, based on knowledge of the learning process and on communication theory, taking into consideration as many factors and variables of the particular situation as possible, so that successful learning will result. ... systematic planning that establishes a way to examine instructional problems and needs, sets a procedure for solving them, and then evaluates the result. (Kemp, 1977, p. 7)

> ...the science of creating detailed specifications for the development, evaluation and maintenance of situations which facilitate the learning of both large and small units of subject matter. (Richey, 1986, p. 9)

> ... is concerned with understanding, improving and applying methods of instruction. As a professional activity done by teachers and instructional developers, it is the process of deciding what methods of instruction are best for bringing about desired changes in student knowledge and skills for a specific course content and a specific student population. ... instructional design as a discipline is concerned with producing knowledge about optimal ‘blueprints’ — knowledge about diverse methods of instruction, optimal combinations of methods (i.e., whole models), and situations in which each of those instructional models is optimal. (Reigeluth, 1983, p. 7)

These quotes illustrate the nature of instructional design as seen by the majority of its adherents—a prescriptive activity which offers advice on how to teach rather than what to teach (the province of curriculum theory), through the use of systematically developed and evaluated learning activities. Further, its aim is to provide generic prescriptions for the design of instruction, thus making it an attempt at a global theory of teaching, a theme to which we shall return.

As a discipline, instructional design is also known as instructional science, a term that has been in use for about 30 years (Lumsdaine, 1964). Its origins,
however, can be found in the works of psychologists such as Hull, Spence and Skinner, earlier this century, who tried to put forward a comprehensive theory of learning. Their efforts came in for criticism from two areas. First, some cognitive psychologists did not believe that such a comprehensive theory was possible, given the complexity of the human mind, and so researched in other directions, such as memory and concept learning. Secondly, others who tried to apply the theories and research results of the psychologists found little of help to them in their teaching. This was particularly true of psychologists such as Gagné and Glaser, who were asked to develop training programs for the US military during the Second World War.

The difficulties and frustrations that were experienced by trainers in such situations were largely responsible for the creation of instructional science. The aim of Gagné and others was to develop prescriptive theories which could be used by teachers to improve the quality of learning. The concurrent rise of behaviourism meant that instructional science was initially linked with it and influenced by it, along with the now largely defunct and discredited use of ‘programmed learning’. Further, the popularity of systems theory gave rise to the notion that ‘instructional design should be conducted by means of a systems approach’ (Gagné and Briggs, 1979, p. 5). Significantly, the systems approach so strongly proselytised was, and continues to be by its adherents, a closed system view.

Gagné has been one of the most influential learning theorists on instructional design. His text, *The Conditions of Learning*, was first published in 1965, and has enjoyed at least four editions (Gagné, 1985). In it, he outlines the connections between learning theory and recommended instructional events. Drawing on the research and theories of other psychologists, such as Ausubel, Bandura, Bloom, Bruner, Glaser and Skinner (a mixture of both cognitive and behavioural psychologists), Gagné justifies his nine events of instruction by linking them with phases of learning. This list of events became a stimulus and framework for those developing instructional design models. The influence of Gagné’s work can be seen in most of the 40 models reviewed by Andrews and Goodson (1980).

Gagné’s was one of the first complete theories of instruction, and it has been joined by others, notably the contributions of Gropper, Landa, Briggs, Scandura, Collins and Stevens, Merrill, Reigeluth and Keller. The work of these theorists was summarised in a book edited by Reigeluth, *Instructional design theories and*
models: An overview of their current status (1983). In this skillfully edited text, Reigeluth provides an overall framework in which the relative contributions of the theorists can be assessed, and links the various ideas through the frequent use of editor’s comments. The eagerly-awaited sequel, designed to provide applications of each of the theories (Reigeluth, 1987), was something of a disappointment, the four years that it took to publish perhaps being indicative of the difficulties in rigidly using such prescriptive models. Another reason advanced was the state of development of the field, for, as Snelbecker (1983, p. 469) admitted, ‘we are still moving “towards” instructional theory, rather than having attained some sufficiently comprehensive and adequately sound conceptualization’. So, despite some decades of sustained effort, theorists have persisted in the belief that a global theory of instruction is a possibility (Case and Bereiter, 1984).

Over the years, instructional design theorists have continued to struggle with their theorising (though not necessarily with their aims). Reigeluth wrote of ‘Educational technology at the crossroads: new mindsets and new directions’, acknowledging that there is something of an identity crisis in the field, and looking at changes in mindset in terms of:

- instruction versus construction
- description versus prescription
- analysis versus synthesis
- validity versus optimality
- R or D versus R & D. (Reigeluth, 1989, p. 68)

The first item on his list is a response to a call for a more constructivist approach to instructional design. Reigeluth appears to attempt to find some middle ground when he claims that

... new educational technologists need to understand that it is not sufficient to just describe what goes on, or should go on, inside a learner’s head. It is important to prescribe what a teacher, or other medium of instruction, should do to help make it happen. It seems that many of the cognitive psychologists and artificial intelligence people who have taken an interest in educational technology are not at all interested in instruction, and in fact have a very narrow view of what educational technology is.
On the other hand, we educational technologists need to realise that, to make good prescriptions, we must understand what we need to make happen inside the learner’s head. This is a different mindset. It does not abandon the instruction approach we now espouse; rather, it expands it. Without such an expanded view, we not only run the risk of being left on the sidelines, but also of failing to meet the higher level needs of the learners we serve. (Reigeluth, 1989, p. 69)

The fifth and final item is also worth further mention, as Reigeluth rightly questions the kind of mindset that separates practitioners and researchers, and counsels developers to become more research oriented.

Merrill et al. (1990) have discussed the contributions of instructional design theories, pointing out their limitations and labeling them as First Generation Instructional Design. Their assessment is that most are based on the psychology of the 50s and 60s; they are analytical, not synthetic; they are component rather than model or schema oriented; and their application requires considerable effort. Because the theories upon which these methods are based predate the development of highly interactive, technology-based delivery systems, little guidance is provided for developing instruction for these systems. (Merrill, Li & Jones, 1990, p. 8)

The tone of this assessment gives notice of the kind of recommendations that are made, which are still rooted in outdated approaches. Typical are the statements about the proposed Second Generation Instructional Design, which will be capable of producing pedagogic prescriptions for the selection of interactive instructional strategies and the selection and sequencing of instructional transaction sets;

and will include

an on-line intelligent advisor program that dynamically customizes the instruction during delivery, based on a mixed-initiative dialog with the student (Merrill, Li & Jones, 1990, p. 10).

The approach is thus apparently technology driven, and intent on the development of a unified theory of instruction.

Another thread weaving its way into the instructional design literature is the constructivist approach (Fosnot, 1984; Jonassen, 1984; Seels, 1989), also alluded to in the previous discussion of Reigeluth. The constructivist position is that
Learning occurs because personal knowledge is constructed by an active and self-regulated learner who resolves conflicts between ideas and reflects on theoretical explanations. The constructivists value errors, see the teacher as an intervener and provide learning environments that allow for play and discovery and are responsive to learner explorations by providing immediate feedback. (Seels, 1989, p. 13)

Fosnot (1984) criticised the systems approach to curriculum and instruction, questioning its quantitative suppositions. Part of her argument was that constructivism points out the basic fallacy in this supposition. Since perception, memory, and all understanding depend on the learner’s operatory structures, the learning curve is a qualitative one, mostly consisting of a series of rising hills. Constructivism suggests that the educator must make both the mechanism of learning and the learner the focus, rather than an empirical subject matter. (Fosnot, 1984, p. 202)

Jonassen (1984) also pointed out the inherent weaknesses of the systems approach, and called for the development of theories that would generate new hypotheses that focus on mental processes rather than technological intervention in the learning process. Part of his argument was that the learners should be allowed to use their personal experience to construct their own models of reality, and that if cognitive operations are performed for them, this will reduce their motivation to think for themselves. Thus, from a constructivist viewpoint, ‘knowledge must ultimately be “conceptually driven” rather than controlled by external mediation (data driven)’ (Jonassen, 1984, p. 157). This notion has sympathy with Doll’s ‘transformative curriculum’, described in the previous chapter. It also has clear implications for instructional design, as it calls for individualised education that builds on learners’ conceptions of knowledge, and stresses the motivation necessary for genuine learning.

Over the years, commentators have attempted to document the progress of instructional design theory. Seels (1989) traced the history of instructional design within educational technology. Her view was that instructional design had been guided by three paradigms, the most recent being the constructivist (the other two being the behaviourist and the cognitive). Her conclusion was that the first paradigm, behaviourism, had its success in behaviour modification, the cognitivists had their greatest influence in the field of artificial intelligence, and that the constructivist paradigm was yet to make a major impact.
Forms of constructivism had made an impact much earlier in Europe, however, where the focus is more often on the process of learning (Marton, 1981; Marton et al., 1984; Morgan, 1993; Ramsden, 1988) than on the teaching of subject matter through prescriptive instructional design models (see also pp. 58, 59). Examples of this approach are found in *Independent Learning in Higher Education* (Henderson & Nathenson, 1984), where traditional instructional design approaches are adapted to accommodate theoretical perspectives from the student learning movement.

Not surprisingly, chaos and its consequences have not yet featured much in the instructional design or educational technology literature. Jonassen (1990), in a short discussion article, attempted to explain the challenges that chaos theory poses to traditional instructional design theory, and suggested how instructional designers might learn to accommodate chaos in their work. Major challenges which he identified relate to:

- the assumed determinism of Instructional Systems Design (ISD);
- the unpredictability of learners and the learning process;
- the relatively linear sequence of procedures that course designers perform in hopes of affecting learning outcomes; (and the fact that)
- information processing models frequently depict learning as an essentially linear process of short-term to long-term memory, which naturally suggests a linear instructional process. (Jonassen, 1990, p. 33)

Jonassen counsels against eliminating chaos from theory or practice, choosing rather to encourage instructional designers to employ techniques that serve to accommodate it. This includes a greater use of qualitative techniques, especially in evaluation, and attempts to interact (rather than intervene) with chaos. He thus claims that:

... we cannot conquer chaos and render the learning process completely predictable. Rather than controlling the instructional process, we should be integrating those factors, including chaos, that affect learning in our systems. Instructional systems need to be made more dynamic by accommodating or integrating the learner’s intentions, political exigencies, social realities, and other chaotic fluctuations into the instructional systems, rather than trying to isolate the system from all these other factors. Technologists need to become more integrative and less analytic. Learning can never be completely predictable, but designers as integrators may make it less doubtful. (Jonassen, 1990, pp. 33-4)
Implicit in reading Jonassen’s comments is a sense that chaos is a reality that we must live with—his position might thus be described as one which attempts to ‘cope with chaos’. He does not appear to recognise that chaos might be something to be celebrated, due to the opportunities it presents for learning systems to move through chaotic states into higher levels. The dissipative structure branch of chaos theory thus appears to be ignored.

More recently, with a greater appreciation of the positive aspects of chaos, You (1993) has made a speculative examination of Instructional Systems Design (ISD) in terms of chaos theory. In particular, You highlights the deficiencies of most current ISD models, and examines the ‘goodness of fit’ between ISD and chaos theory. Drawing on three particular characteristics of chaotic systems (sensitive dependence on initial conditions, fractals and strange attractors), You links them to a number of key ways in which concepts differ between conventional ISD and chaos theory: ‘linearity versus nonlinearity, deterministic predictability versus indeterministic unpredictability, closed or equilibrium systems versus open or far-from-equilibrium systems, and the negative feedback loop versus the positive feedback loop’ (You, 1993, pp. 19-20).

The common linear nature of ISD models is linked by You to reductionism, both criticised as ‘not sufficiently flexible for working with environmental turbulence or sophisticated educational systems’ (You, 1993, p. 20). An appeal is made for ISD models to reflect more accurately the nonlinearity of dynamic systems, thus acknowledging greater interdependence between parts of the system (as opposed to reductionism), and recognising unpredictable aspects of learning.

As mentioned above by Jonassen, You also outlines how chaos theory challenges ISD’s base of deterministic predictability, ‘because a small change or perturbation in the initial conditions of a system can have large, unexpected effects’ (You, 1993, p. 21). He also compares the inadequacies of the closed-system view implicit in much of ISD with a more realistic open-system perspective. Allied to this is the way in which feedback functions within a system. In traditional ISD, feedback is used to bring the system to a state of equilibrium. It is essentially negative, in that it maintains and organizes a system’s functions by neutralizing and modifying the external forces and error variance in line with the system’s predetermined goal through self-regulation and control capacities. Thus, negative feedback is called a deviation-counteracting
feedback loop or equilibrium-oriented feedback loop. ... An
equilibrium system that uses negative feedback is unable to account for
transient events, sudden discontinuous change, or interrelatedness and
interdependence with its environment. (You, 1993, p. 23)

On the other hand, positive feedback loops envision that ‘mistakes, errors and
imbalance are actually the substance and driving forces of the system’s
“becoming”’ (You, 1993, p. 23). This claim in favour of the beneficial effects of
positive feedback loops is linked by You to similar views expressed by Sawada
and Caley (1985), the open systems approach of Banathy (1987) and Piaget’s
(1977) equilibrium-disequilibrium-reequilibrium model of development.
Applying these notions to ISD, You claims:

It is imperative to base our ISD models on the positive or deviation-
amplifying feedback loop in order to allow the instructional system to
exchange information or energy between the system and environment,
to initiate appropriate system response, and thus to regulate itself. In
this way ISD models can adapt to changes in their internal structures
and renew themselves, and thereby survive and continue to function.
Positive feedback should be designed into the ISD model in order for
the instructional system to continue becoming rather than simply
being. (You, 1993, p. 23)

Such ideas are also canvassed as appropriate for the way people learn, being
classified as a dynamic, chaotic process, essential to growth. It is an active,
rather than passive, view of knowledge, where learners follow discontinuous,
complex and unpredictable patterns of learning.

The implications of this for models of ISD is then explored. Against the general
trend of instructional technologists to place priority on the specification of
behavioural objectives early in development, You counsels:

From the perspective of chaos theory, however, while a general
direction for learning may be specified, defining the specific
boundaries of what should be learned is unnecessary, since chaos
theory allows more ‘authentic tasks’ to emerge during the learning
process. (You, 1993, p. 25)

The specific design perspective that You then espouses is one based on the
simple iterative nature of many of the mathematical applications of chaos
theory. That is, designers should concentrate on a few basic learning principles
and iterative operations, rather than detailed prescriptive guidelines for
learning. Making assumptions about the ability and desirability of students to
structure and build on their own learning experiences, the format of design models is recommended as follows:

Alternative models of ISD are more appropriately built on a concurrent or spiral design format rather than a linear, algorithmic one. Design from the perspective of chaos theory and dynamics system thinking is akin to ... a hermeneutic practice that does not follow fixed or linear steps, but instead takes a holistic, interactive, spiralling, and dialectical form. (You, 1993, p. 26)

Interestingly, in the same issue of *Educational Technology Research and Development*, a discussion of the implications of a constructivist philosophy for ISD (Lebow, 1993) concludes with an analogy from chaos theory. Lebow does not envisage constructivism as an alternative paradigm, but as ‘an alternative set of values’ for approaching ISD. In doing so, he proposes a set of five principles to guide development:

1. Maintain a buffer between the learner and the potentially damaging effects of instructional practices.
2. Provide a context for learning that supports both autonomy and relatedness.
3. Embed the reasons for learning into the learning activity itself.
4. Support self-regulation through the promotion of skills and attitudes that enable the learner to assume increasing responsibility for the developmental restructuring process.
5. Strengthen the learner’s tendency to engage in intentional learning processes, especially by encouraging the strategic exploration of errors. (Lebow, 1993, p. 5)

The ‘self-regulating’ encouraged in the fourth principle sits nicely with chaotic notions of dissipative structures. Implicit in Lebow’s discussion of the principle is the idea of iterative cycles of learning, the encouragement of disorder or disequilibrium, so that a higher sense of order can be achieved.

Constructivist practices tend to nurture processes of restructuring and transformation by acting as ‘disturbers of equilibrium’ (Fosnot, 1984). By helping the learner experience how his or her naive model is insufficient for solving meaningful and personally relevant problems, constructivist practices challenge the learner to construct new models. (Lebow, 1993, p. 10)

The final principle also resonates with the crucial role of positive feedback loops in the transformation from chaos to order. The link is quite explicit, as Lebow explains that ‘errors are seen as positive stimulants for the kinds of perturbations that create disequilibrium necessary for self-reflection and conceptual restructuring’ (Lebow, 1993, p. 12).
Further connections are also implicit in Lebow’s work, such as the holistic nature of the constructivist mindset, with its implication that the whole is greater than the sum of its parts. Constructivists generally do not favour ‘piecemeal’ learning, with content dissected into small parts for ease of consumption. The idea of providing simple iterative processes for learning, rather than the complex sequencing of instructional events, is introduced in discussing the second principle, as Lebow notes that:

... teaching is less the sequencing of instructional events and more the application of principles for responding to the needs of the situation. (Lebow, 1993, p. 8)

From the above, it is thus not surprising that, as mentioned, chaos theory warrants a mention in the conclusion to Lebow’s article. His mention comes just after the following example:

... the instructional designer builds in support for the ability to think reflectively through modeling, Socratic dialog, and various strategies for helping learners make their thinking processes overt. In a sense, under the influence of constructivist values, means and ends become isomorphic and the desired results and preferred techniques appear as reflections of the same whole. (Lebow, 1993, p. 14)

Then, using an ‘apt analogy’ from chaos theory, he includes in his final paragraph:

This phenomenon, termed ‘sensitive dependence on initial conditions’, suggests ... that students’ feelings, attitudes, values, goals, doubts, and concerns are involved in every learning situation and affect future learning in ways that cannot be reliably predicted. From this perspective, the ultimate concern of educators should be to help the learner develop an enduring faith that persistent effort guided by purposeful reflection will result in reaching meaningful personal goals. (Lebow, 1993, p. 14)

That there is a real and significant change taking place in the literature associated with instructional design is typified by a recent issue of *Educational Technology*. Although usually overloaded with articles on aspects of educational computing, along with contributions reflecting fairly traditional approaches to educational technology, the February 1994 issue was something of a revelation, as it was handed over to the critical theorists, postmodernists and deconstructionists, who have established an ‘invisible college’ of persons who feel ‘concern about the ethics of the field and its social responsibilities’ (Yeaman
et al., 1994, p. 7). That they made something of an impact is reflected in the comments made by one of Educational Technology’s Contributing Editors, who was given the chance to respond to the special issue.

As I read these articles, I found them to be thought-provoking, intriguing, frustrating, and at times disturbing. They are thought-provoking and intriguing because the ideas these authors present may not be like anything we have encountered before in the context of educational technology. (Martin, 1994, p. 64)

Though there is no explicit reference to chaos theory in the special issue, many of the expressed ideas do, not surprisingly, resonate with the challenges that chaos theory poses. Further, it provides evidence that the field of educational technology is within, or entering, a turbulent phase which may possibly lead into a new era, no longer dominated by positivist attitudes and approaches.

**Instructional design practice**

Much of what has been discussed so far provides predominantly theoretical perspectives. What about empirical support for chaotic concepts and instructional design?

One of the most helpful contributors to both the theory and practice of instructional design is Gordon Rowland, who has been critical of much of instructional design theory (Rowland, 1992; 1993). The two key contributions that he makes are that he bases his views on the results of empirical research (something of a rarity in the field), and that he takes a broad perspective, making particular links between instructional design and the wider world of design in general. Also of particular interest, at least in terms of this thesis, is the way that his conclusions have sympathy with many of the findings of chaos theory.

Rowland identifies two strands, or representations, of instructional design in the literature. The historically dominant view sees

ID as a deterministic, essentially rational and logical process, a set of procedures to be followed. Lack of success ... is blamed on poor implementation by the designer(s) or on the primitive state of an emergent science of instructional design. An alternative explanation is that the view itself is inadequate. ID may better be characterized as a creative process, based on intuition as well as rationality, involving divergent as well as convergent processes. (Rowland, 1993, p. 79)
Rowland carefully outlines and supports the claim that instructional design can be viewed as part of the wider design world, by examining the definition of design (itself somewhat disputed), its purpose, its relationship to other processes, the factors that influence it, the nature of the design process, and the findings of both his own empirical work and that of other researchers.

Consider the following two definitions of design, the first being Rowland’s, and the second which he quotes in his argument.

Design is a disciplined inquiry engaged in for the purpose of creating some new thing of practical utility. It involves exploring an ill-defined situation, finding—as well as solving—a problem(s), and specifying ways to effect change. Design is carried out in numerous fields and will vary depending on the designer and on the type of thing that is designed. Designing requires a balance of reason and intuition, an impetus to act, and an ability to reflect on actions taken. (Rowland, 1993, p. 80)

To design is to plan and organize, to order and to relate and to control. In short, it embraces all means that oppose disorder and accident. (Albers, in Lauer, 1985, p. 239)

Already, elements that relate to concepts in chaos theory can be perceived as emerging. A situation being ‘ill-defined’, as mentioned by Rowland, is another way of stating that the initial conditions cannot be specified with precision; its requirement of balance between opposing forces relates to the tension between order and chaos, as does the appeal to oppose disorder, the effort to create order out of chaos.

Further insight contained in the article further strengthens these connections. In examining the nature of the design process, Rowland contrasts designing with mathematical problem solving, which may be extremely complex, but in general has fixed initial conditions, a single solution and a limited number of methods by which to obtain that solution. Not so with a design problem:

A nearly infinite number of different solutions to this same problem are possible ... Neither the initial conditions nor the most appropriate and efficient process to obtain a satisfactory solution are entirely clear. (Rowland, 1993, p. 83)

So, the designer has to locate relevant key points from a vast array of information, some of which can help in locating the problem and in helping the
process. To attempt to impose a rigid, systems engineering model on such situations

severely restricts the designer’s ability to understand the problem. They feel that understanding is developed through efforts to solve the problem. The two processes are interdependent and simultaneous or cyclical, and goals are gradually uncovered in the context of solution attempts. ... the process is thus dynamic and unpredictable. (Rowland, 1993, p. 84)

This view, known as ‘exploratory’ design (Robinson, 1986) or ‘soft-systems analysis’ (Holt et al., 1985) claims that not only is this an accurate reflection of the design process, but that it results in a clearer understanding both of the problem and its solution. Further, it also assists the revealing of subproblems, perhaps unrecognised in the initial stages. It thus assists in unpacking the layers of a design problem, of locating eddies of turbulence within the larger chaotic domain. This might thus also be called an ‘open systems’ viewpoint, allowing as it does for greater consideration of alternatives and other influences.

The issue of subproblems is further explored, especially as systematic methods typically attempt to solve subproblems in isolation, thus emphasising the parts rather than the whole and resulting in badly integrated solutions to design problems. An exploratory, or open systems, view means that the designer

balances resources and organizes the design process according to relationships between the subproblems, and a series of problem-solving cycles is implied. ... Rather than defining all problems prior to attempting to solve any of them, the designer may await the emergence of subproblems during preliminary solution attempts, and, by focusing on subproblems as they occur, may find a more elegant solution to the whole. Again, the process implied is much more dynamic. Cycles of problem solving are derived dynamically during the design process, vary in duration and extent, and address subproblems when and in whatever forms they present themselves. Neither the subproblems nor the means to address them are felt to be completely specifiable at the beginning. (Rowland, 1993, p. 85)

The essence of these notions sits comfortably with the balance between the forces operating in open systems at far from equilibrium conditions and Prigogine’s self-organising systems, described earlier. Rowland proceeds to use such terms in outlining a recent conceptual description of the designer. Earlier conceptions had moved from that of a magician, with the emphasis on
creativity, to the ‘designer as computer’, with logic and rational processes reigning supreme. The conception propounded to replace these two is

the designer as a self-organizing system ... Design expertise is thought to lie not only in knowledge and skill, but in the designer’s ability to reflect on his or her own actions. ... the designer must be a self-organizing system capable of controlling both rational and creative processes, knowing when to apply each and varying strategies and tactics as the situation demands. (Rowland, 1993, p. 86)

Two principal related ideas require further discussion here; reflecting on action and the designer as a self-organising system. The first has been most vigorously and explicitly pursued by Schön (1983; 1987), who coined the term ‘reflection-in-action’ to describe the processes that professionals or experts in disparate fields use to accomplish their activity, contrasting it with the traditional approach of technical rationality to model such behaviour. In particular, drawing on his experience, principally from architectural design but also from a variety of other professional roles, he articulates new models for professional training, closely allied to practice. As well, his advocacy of the ‘reflective practitioner’, with its recognition of the complexities of professional practice, seems in sympathy with a number of chaotic concepts. It also presents a positive perspective on the sometimes uneasy relationship between research and practice.

... when we reject the traditional view of professional knowledge, recognizing that practitioners may become reflective practitioners in situations of uncertainty, instability, uniqueness, and conflict, we have recast the relationship between research and practice. For on this perspective, research is an activity of practitioners. It is triggered by features of the practice situation, undertaken on the spot, and immediately linked to action. (Schön, 1983, p. 308, italics in original)

It is possible here to link Schön’s proposition of becoming a reflective practitioner, as opposed to being a professional, with Prigogine’s same ideas for a science of becoming, as opposed to a science of being. Further, reading Schön’s ideas of the possible effects of reflective practitioners emerging in, say, an educational bureaucracy, it seems quite natural to equate this to the notion of the emergence of pockets of chaos in an ostensibly ‘dynamically conservative system’ (Schön, 1983, p. 332), with the potential to move the system to a state of non-equilibrium, from which a new and higher sense of order may emerge (Schön’s ‘reflective institution’).

Links can be made here with the proposition, earlier discussed (see pp. 31-34), of educational organisations as ‘complex adaptive systems.’ The way such
systems orient themselves to ‘the edge of chaos’ has implications for the manner in which educational systems organise themselves.

Since the systems that are capable of the most complex, sophisticated responses will always have the edge in a competitive world ... then frozen systems can always do better by loosening up a bit, and turbulent systems can always do better by getting themselves a little more organized. So if a system isn’t on the edge of chaos already, you’d expect learning and evolution to push it in that direction. And if it is on the edge of chaos, then you’d expect learning and evolution to pull it back if it ever starts to drift away. In other words, you’d expect learning and evolution to make the edge of chaos stable, the natural place for complex, adaptive systems to be. (Waldrop, 1992, p. 295)

The reflective, or learning institution, then, is the one that can move to the edge of chaos from either ‘frozen’ equilibrium or chaotic turbulence, and maintain itself there in order to flourish and evolve.

Returning to Schön, his stimulating ideas also sit squarely with the notion of self-organising. Actions taken by the designer are reflected back by their consequences, which influence further actions. The scenario thus constantly changes, through a series of episodes or cycles. This also leads to a positive view of incidents or effects from either within or outside the system that affect the design process. As a self-organising system, the designer has a novel view of designing, described by Allen as ‘situated designing’.

... a view of activity which recognizes that the unexpected things in the path are not only obstacles to be overcome, but also opportunities for new views on the problem, and can produce new elements for the designer to use in forming the next action. (Allen, 1988, p. 12)

Rowland takes this further, linking situated designing to Suchman’s ‘situated action’ (Suchman, 1987). His description shows congruence with the iterative nature of dissipative structures and their behaviour, as previously described. He states that the function of situated action (or designing)

is not, however, only to respond to a stimulus. It serves to shape the situation for subsequent decisions, and it does so in ways that are not entirely predictable. Thus, the environment (situation) is dynamic, not static, and each action is formed in terms of the effects of previous actions. This is what distinguishes a situated action from a plan. ... Plans may therefore be more consistent with a ‘rational’ view of designing, one that sees problems as well-defined, while the concept of situated designing may be more consistent with a ‘creative’ view, one that sees problems as ill-defined.
... some level of situated designing, and of reflection-in-action, is apparently necessary for designers. In a sense, reflection-in-action may describe the process of controlling situated actions ... and the mind engaged in both is a self-organizing system. (Rowland, 1993, p. 87)

Rowland’s appraisal of the tension between design theory and practice is not so much the distinction between rational and creative approaches, but

how well- or ill-defined the problem is, and in particular the designer’s perception of how well- or ill-defined the problem is, may be most important. (Rowland, 1993, p. 87)

In terms of chaos theory, what is thus claimed to be important is the lack of specificity of initial conditions, and whether the system is at far from equilibrium conditions. These are the qualities that can apparently lead to good design, the recognition of the functioning of a dissipative structure, with all its opportunities to achieve order from chaos.

This notion is also implicit in Rowland’s efforts to align the practice of instructional design with design in general. After drawing parallels between the two, establishing instructional design as a subset of design, he outlines two views of the field evident in the literature, one largely rational (citing definitions much like those found in traditional instructional design models) and the other essentially creative. In discussing the latter, he summarises the position as one in which instructional design is

a creative process in which designing is driven by the recognition of opportunities and is carried out in iterative cycles. The designer interprets needs and identifies potential strategies in the context of the specific situation at hand. Standard rules or procedures are not employed, as they are felt to be based on a reduction or oversimplification of factors affecting the instructional system. The process is intuitive, creative, or artistic, and emphasizes early attempts at solution rather than complete understanding prior to solution attempts. ...

... the phenomena with which designers work are so complex, involve so many variables, and are so uncertain that the designer must treat each design as a unique case, not a recurring event. The design product and the design process are bound to context. (Rowland, 1993, pp. 88-9)

Points of specific interest in this summary are the rejection of global theorising in favour of localised understanding, the role of iterative cycles with their attendant opportunities to be harnessed, and the recognition of the inability to specify initial conditions, all essential ingredients of chaos approaches to an
understanding of process. These parallels emerge quite clearly, despite the indication that, judging from the references which Rowland uses, he was not informed by or adopting in any explicit way a chaotic perspective.

**Instructional designers**

In the previous section, what started out as a discussion of instructional design became progressively entwined with considerations of the designer within the process. What now follows more explicitly traces the history of considerations of instructional designers in the literature, particularly as it relates to the concepts presented in this and the previous chapter.

The study of instructional designers is, not surprisingly, even more recent than the development of instructional theory, and dates from the late 1960s. Not many texts on instructional design deal in any way with the working relationships of instructional designers with others in development teams, and early contributions were simply prescriptive guidelines to aid instructional designers in developing relationships with subject matter experts (Haney, Lange and Barson, 1968).

Recognition of the need for more attention to be paid to the interpersonal aspects of instructional development grew during the 1970s, with a typical comment being that of Davies:

... development and evaluation only make sense in the context of people, and yet—in an almost desperate attempt to realize the task—we sometimes tend to ignore the relationship side of the instructional situation. No matter how pert our development and evaluation procedures, no matter how sophisticated and scientifically based our techniques, little will be achieved if the quality of human relationships is overlooked or ignored. A project that is task oriented, without being relationship oriented, thereby increases the probability of its own rejection. (Davies, 1975, p. 372)

Davies’s article, although devoid of research evidence, discusses the relationship between instructional developers/evaluators in terms of three consultation models. This theoretical approach describes the product model (the developer creates and presents a solution after the client explains what is needed), the prescription model (emphasis is on maintaining a ‘healthy’ instructional state during the contact period) and the product-process model...
(assumes a dynamic relationship, employing elements of both the other two models). This third model is advocated, and the relationship activities which arise as a consequence of this model are discussed, under the three broad categories of engineering, maintaining and terminating a relationship (Davies, 1975). A shift to a more open systems approach can be detected in this work.

Some empirical work was reported at the time, including a study by Price (1976), who explored the verbal behaviours of instructional developers and their clients (a consultation model was again assumed) during their first meetings. The study found that most time was spent in the solution discussion phase, instructional methods were frequently the centre of discussions of content, and the developer’s process behaviours were mostly explaining, offering opinions and reinforcing the client.

Bratton (1979) reported an investigation by Rutt (1979), who developed an Instructional Development Consultation Styles Inventory. The inventory was based on four consultation models drawn from the literature, and was mailed to instructional designers working in higher education institutions in the United States. The major finding, one to which I will frequently return in other contexts, was that the designers do not follow any one particular model, regardless of the relationship phase, the innovation under discussion or the level of the project.

Although at this time the consultation relationship became a topic of interest to instructional designers, most contributions in the literature lacked a theoretical or research framework. Examples include Thiagarajan (1973), who gave opinions based on personal experience in dealing with subject-matter experts, Colton (1974), who posited instructional design as a helping profession, emphasizing the atmosphere of trust, and Deden-Parker (1979), who described the skills required by a designer to function effectively in the corporate world. At the time, Bratton (1979) commented that, with respect to the literature in instructional development consultation:

... our present knowledge of the area can best be described as a mile wide and an inch deep. Much of the writing falls in the categories of personal opinions and how-to-do-it approaches. (Bratton, 1979, p. 6)

He concluded by discussing four areas of possible future inquiry, under the question titles of:
1 What does occur behind the office doors when developers and clients interact?

2 What constitutes a ‘good’ developer-client relationship?

3 What is the client’s view?

4 How should developers be trained?

Four years later Bratton (1983) was still urging sustained investigation of the developer-client relationship, and promoting greater emphasis on consultation skills in the training of instructional developers.

A partial response to the first three of the above questions was provided by Coldeway and Rasmussen (1984), who looked at the personal experiences of developers and clients in the development process. Focusing on anecdotal evidence provided by interviews conducted with a small number of subject matter experts, they concluded that such academics can be threatened and demotivated by the process, and discussed ways that developers can apply certain interpersonal skills to overcome such problems.

Providing a break from the consultation approaches, Locatis, Weisberg and Toothman (1984) concentrated on personal and negotiation skills of instructional developers. Drawing on the theoretical contributions of Pask (conversation theory), Habermas (communicative competence), Argyris and Schön (interpersonal interaction) and Stake (responsive evaluation), they present a number of ways to enhance the personal communication skills of instructional developers.
Kerr (1983) contributed to the empirical knowledge about how instructional designers work by conducting a study of design activities in a group of novice instructional designers. The focus of the study was on identifying the design abilities of the group, a surprisingly neglected area of research and interest among instructional designers. He also made some penetrating observations of instructional design models, concluding that the process is made to appear overly mechanistic. Although there are a few caveats, the process is made to appear one of filling out the right tables and identifying all the constraints, rather than one of making decisions that may ultimately be personal and based on some ineffable sense of ‘what’s right’ in a given context. (Kerr, 1983, p. 48)

Somewhat in sympathy with a chaos theory view of the design of instruction, his research led him to conclude that

Ways need to be found to help designers maintain an open set of options for longer into the initial phases of design work. ... A related concern is the need simply to encourage designers to be more reflexive in their actions, more aware of how they are proceeding, more conscious of their own thoughts, reactions and decisions. ... instructional design has an advantage (though some might mistakenly see it as a disadvantage) in that it is inherently an extremely complex process encompassing a whole series of situational variables, material factors, and interaction among the various instructor and student roles. (Kerr, 1983, pp. 56-8)

This is clearly a view which considers complexity and ambiguity as advantageous, factors to be relished for their creative possibilities. Whether complexity and ambiguity are used to advantage by instructional designers in distance education was a key part of my empirical investigation, revealed later in this thesis.

A significant contribution to related research was made by Shrock (1985), who made a ‘systematic investigation of how potential users view instructional technology and instructional technologists’ (Shrock, 1985, p. 16). She conducted a naturalistic study of a large-scale instructional development program, the results of which partly concluded that the majority of faculty members did not accept instructional development, affective concerns went unrecognised, products and quantity were overemphasised, and there was general misunderstanding of the principles and procedures of instructional development. These results were based on analysis of a data bank which included observation of workshop presentations and structured interviews with
participants and consultants, examination of participants’ products and records of past workshops, examination of correspondence files, unstructured interviews with administrators and instructional developer, and informal observation of and conversations with participants, consultants and administrators. Shrock ends her contribution with a plea, interestingly including reference to both culture and systems:

If instructional technology is ever to become more than an occupation for instructional technologists and a passing curiosity for a small minority of teachers, we need to acknowledge the depth of our ignorance about the subculture and institutional systems we seek to influence and then take steps to remedy our deficiency. (Shrock, 1985, p. 24)

What is clearly implied by these comments is that a more holistic view is required, one that takes an open systems perspective and endeavours to harness the creative forces that such a perspective unleashes.

As previously mentioned, Rowland has conducted empirical research on the ways that instructional designers go about their designing. His findings, along with others (such as Kerr, discussed above), do align well with the results of studies of design processes in other contexts, but have little accord with much of the instructional design literature. As he summarised,

These results match studies of design processes in other fields, but contradict views in the literature on ID, especially those representing a purely rational perspective. Even what designers considered to be a relatively simple problem was interpreted as ill-defined. The notion of gaining ‘complete’ problem understanding before trying to solve—something implied in most ID models—was contradicted by the almost immediate consideration of solutions. The yes/no decision of entry into ID processes, also typical of ID models, did not occur. Use of instructional design principles was not evident, and adherence to a formal plan (e.g., a sequence of steps to be taken) was not observed. (Rowland, 1993, p. 90)

Given that these were the things that did not occur, then what did happen? What process were expert instructional designers observed to follow? Rowland summarises his key findings and results, including the following selection:

Expert instructional designers appeared to interpret and treat problems as ill-defined. ...

… both problem and solution were matched to integrated problem-solution patterns in memory, some retrieved via specific case experiences. ...
Many different causal factors relating to the performance of individuals and the organization were considered, and a range of instructional interventions were specified.

‘Scientific principles’ of instructional design may have served as heuristics for deriving a solution or for evaluating previously imagined solution ideas. It was rare for a designer to make a clear prescription of method from a small set of known factors. More common was a ‘rule of thumb’ being used to select a type of solution or to evaluate the quality of a particular idea. In doing this selecting and evaluating, ‘global’ as well as ‘local’ criteria were applied (i.e., a wide range of systemic factors were considered).

Expert processes were better characterized as situated actions taken in response to moment-to-moment conditions than as predetermined steps. While a general plan was evident (at least in retrospect), decisions on how to proceed were made on an ad hoc basis with respect to the goal of a solved problem rather than with respect to a formal plan for how to solve it. (Rowland, 1993, p. 89)

The resonance between these findings and aspects of chaotic interpretations of processes and phenomena is clear. Lack of specificity of initial conditions is endemic, and the patterns of development follow the typical cycles of dissipative structures, with situated actions at certain moments providing bifurcation points as the process moved from chaos to order. All the while a multitude of factors impinged on the design, reflecting an open systems perspective typical of turbulent processes.

**Instructional design and distance education**

It might be claimed that instructional design took the great leap across the Atlantic to Europe with the growth of the UK’s Open University. The establishment of such large scale distance education offerings was partly accomplished by the use of systematic development procedures which included instructional design features and personnel.

However, not all of the theory and practice espoused by American instructional designers was welcomed by their transatlantic colleagues, who modified their techniques and challenged many of their cherished beliefs. In particular, Macdonald-Ross (1973) provided an extensive critical analysis of the application of closed system, universal approaches and the use of behavioural objectives. This critique was made in the light of the experience of the Open University in
its attempts to apply such techniques to the development of distance learning materials for higher education. His conclusion was:

The stronger feed-forward version of the systematic approach rested heavily on behavioural objectives laying the foundation for explicit, adequate and well-justified procedures which would work when applied by anyone who understood them. This position is now undermined; the prescriptive approach fails—unless in practice it is buttressed by unspecified and unformulated intuitive skills imported ad hoc to support the design system. (Macdonald-Ross, 1973, p. 60)

The resulting rejection of aspects of American methods is significant, as the Open University is one of the largest educational technology projects ever undertaken, and is commonly viewed as being highly successful. The outcome was the belief that the objectives model is unsuited to most of higher education, so that many Open University courses begin by focusing on thematic questions that will be discussed in the materials. In fact, by the early 1980s, many courses had dispensed with the use of prior objectives for students at all (Riley, 1984).

This modification of the traditional rational approach to educational technology is discussed in detail by Harris (1987) in his ‘deconstruction’ (Bailey, 1988) of the Open University as the exemplar of distance education. Harris outlines the evolution of educational technology within the Open University, noting the features that were modified or rejected as the institution gradually moved away from hardline educational technology to approaches which give more credence to student-centred learning. Other pressures to change included the self-critical materials produced by teams within the institution, the conservatism of some academic staff and the opposition from ‘what might be termed “progressive” stances which opposed notions of “creativity” and “subjectivity” to the encroachment of excessively rational specification, analysis and test that educational technology seemed to threaten’ (Harris, 1987, p. 63). Nevertheless, despite the changes, Harris’s conclusion is still somewhat less than laudatory:

The abiding triumph and ultimate guarantor of old fashioned, ‘hard line’ educational technology remains—the teaching system itself. In that system any ‘resistance’ takes on a contradictory air since it occurs within a set of arrangements that embody and express the very beliefs which are being opposed. Refusals to cooperate look tokenist and purely defensive; attempts to use the system for radical ends, by producing ‘critical’ materials, run the risk of indifference or incorporation into an academic ‘culture industry’; ... The ‘softening’ of educational technology might have helped it seem more ‘realistic’: it really can now appear, as does the teaching system itself, as the harmless systematization of existing common sense conventions of
academic life, including a certain ‘all too human’ vagueness and lack of precision. (Harris, 1987, p. 65)

The differing approach and attitude adopted by the Open University is also reflected in the texts written by UK practitioners, which tend to be more pragmatic and practical. For example, Rowntree (1981; 1986), as well as suggesting the use of some systematic procedures, also encourages intuitive approaches, while Earl (1987) posits that instructional design should have more to do with ‘art and craft’ than with technology. His basic message, although rooted in systematic models of course design, is that effective instructional design is a combination of intuition, creativity and logical thinking (Earl, 1987, p. 7).

An international assessment of instructional design in distance education is provided by Parer (1989), whose edited text contains a variety of case studies and points of view from around the globe. Much of it focuses on the role of the designer, rather than just the design/development process, and this theme of the work of the instructional designer will be taken up in the next section.

**Instructional designers in distance education**

This section examines the literature on the work of instructional designers (or those with similar or equivalent titles) in distance education. In particular, efforts will be made to ascertain where, by retrospective analysis, links could be made with the fundamental aspects of chaos theory. As practically none of the studies or observations (apart from my own) have been from a ‘chaotic’ viewpoint, the nature of the connections is necessarily speculative.

With little empirical work having been done in the general field of the work of instructional designers, it is not surprising that even less exists within the world of instructional designers in distance education. Despite the lack of research investigation and evidence, their role has come in for discussion and debate within the distance education literature. This debate extends to the basic question of whether the employment of instructional designers in distance education is even justified (Shaw and Taylor, 1983; Kelly, 1987).

Contributions in the literature concerning the role of instructional designers can perhaps be characterised by advocacy tinged with uncertainty. That is, there is a
glorious variety of opinion, often tentatively propounded (McMillan, 1988), as to what instructional designers are and what they should do. One early model of the role was that of ‘transformer’ (Waller, 1977), while others have included ‘student advocate’ (Mahoney, 1988), ‘joint venturer’, ‘innovator’ (Jackling, 1989) and even ‘amicable guerrilla’ (Carl, 1989). In fact, holders of such positions are not even sure they should be called instructional designers, as is evidenced by the increasing use of other terms, with ‘educational developer’ having made inroads (Parer, 1989) within distance education.

One empirical study which touched on the issue of the academic/instructional designer relationship was that of McGuire, in her examination of the adaptation of academics to the demands of working in a distance education institution. Although the bulk of her study focused on work transition and organisational socialisation, the role of the instructional designer in helping academics to ‘learn the ropes’ was examined and commented on:

IDs appeared to play a crucial role in the socialization of the new academic, with the majority indicating that ID help was critical for learning the skills of course writing and providing ways of thinking about distance education. (McGuire, 1988, p. 63)

Notwithstanding the contribution of the instructional designers, McGuire was still able to conclude from the data that, even after some years, ‘academics were still experiencing some difficulty in adapting to the rhythm and isolation in a distance education facility’ (McGuire, 1988, p. 69).

This problem of the difficulties academics suffer, along with discussion of related issues, was studied in depth by Riley (1984), at the Open University. Riley’s position was that the kind of ‘how to do it’ advice offered by instructional designers to course writers was based on three misleading assumptions:

The first of these is that there is no need for advice on the process of preparation, that establishing an ideal image of the desired product is enough. The second assumption is that good planning makes for easy writing and that the planning should be separated from finding the actual words for the lesson. The third assumption is that the ‘objectives first’ approach is not only best for the students’ learning, but is the best way for the teacher to prepare his lessons. (Riley, 1984, p. 13)

For some years prior to Riley’s comments, the Open University had been trying address the difficulties of course design and production, through a variety of
approaches. The Production Methods Committee had been unable to make much progress, and so a number of Methods Review Groups investigated a selection of course teams, again with little headway being made.

The University’s Institute of Educational Technology arranged for consultants from the Tavistock Institute of Human Relations to enquire into the functioning of course teams, in another attempt to penetrate the preparation process. Using a psychoanalytic perspective, the consultants interest was in ‘the workings of the unconscious within the political frame of institutions’ (Lawrence and Young, 1979, p. 2). Two quotations from the report can perhaps exemplify why the report received mixed reactions and was largely ignored.

There is, we hypothesise, a process of projection and introjection taking place between the individual and the CT (course team), the CT and the OU, and the OU and the IET. By this we mean that individuals in order to preserve themselves as good objects in their own eyes have to deposit their own perceived bad aspects in the structure (i.e., projection). Then they find that they have to reincorporate this (introjection), but this is too painful so it becomes split-off further. Hence, there is nothing good to take in from anywhere so people have to build a higher wall around themselves to ensure that what good they believe they have will be preserved from erosion. (Lawrence and Young, 1979, p. 5)

To some extent impotency is wished for within IET because within it there are people who act as internal saboteurs and consequently ensure that IET will not have a collective voice on occasions and ‘speak’ to the OU about what the OU is doing in contemporary society. Some IET members have got their intellectual, technical and psychic niches and merely want to perseverate in them. Others want to do otherwise. (Lawrence and Young, 1979, p. 9)

One positive effect of the report was its contribution to the growing acceptance that course development and production was difficult. Since then, there have been many workshops organised on various aspects and new approaches to course design and development. Additionally, Riley made an extensive study of the drafting processes of individual academic course writers and the operations of course teams (Riley, 1984; 1984a, b & c; 1986). The research included interviews with staff about the drafting process, making a case study of a course team over a two-year working period and conducting a survey of opinions on the influences on course team decisions.

The key features that Riley identified within course production, as experienced by course writers, are that the process is complex, individual and emotional.
Additionally, she was critical of lists of essential tasks prepared by instructional
designers for course writers, preferring a more problem-oriented approach.
Riley wisely concludes that the preferred base for recommendations to course
writers should be professional practice—that is, ‘recommendations based on
what experienced and successful distance educators actually do’ (Riley, 1984, p.
52).

Interestingly, what such educators ‘actually do’, as reported by Riley, has
sympathy with the notion of searching for order within chaos. As she explains
centering the drafting behaviour of a particular writer,

In the second quotation, the Mathematician was trying to write the
final words of his lesson out in full. Although he had completed two
previous drafts which had been approved by his colleagues, his head
was still full of a great diversity of concerns and criteria, and he kept
changing his mind and seeing that one decision meant that another
piece of the text had to be changed to fit. (Riley, 1984, p. 6)

The ideas of interconnectedness and iteration are also implicit in her analysis of
the behaviour of those preparing distance education materials. Thus we find in
her comments concerning her observations:

When the roles are not formally separated, many experienced authors
find that they change their plans as they write. As the Open University
Social Scientist quoted above said, ‘... beyond a certain point, the only
thing to do is start writing and see if it will work out.’ In writing, ideas
are clarified and better ways of ordering the topics can be seen, or new
perspectives develop, so that the relative importance of the objectives
shifts. This creative role of the struggle to express oneself is recognised
by some Psychologists who specialise in studying writing. For
example, Wason encourages what he calls a stage of ‘uncritical
exteriorisation of thought about a topic’ in writing, as a means of
generating new ideas. If major new insights come during drafting, then
the planning of distance education materials should not be separated
from the writing stage, and putting the teaching into words cannot be
seen as a subsidiary process. (Riley, 1984, p. 11)

The iterative nature of the process is explicit in the following comment, wherein
Riley’s notion of spiralling might well be equated with the recursive symmetries
exhibited by chaotic systems.

A common way in which experienced writers of distance lessons cope
with this complexity is to adopt a strategy which I call spiralling. By
this I mean that on their first attempt at a draft, they will only allow a
few concerns to intrude on their search for a way of tackling their
lesson. At each subsequent draft, they are able to take a few more ideas
on board, until the final version has been checked against their full range of criteria. (Riley, 1984, pp. 21-2)

The outcome of these iterative cycles is movement towards far-from-equilibrium conditions, given recognition by Riley as the out-of-step phenomenon. She describes it thus:

... many of the changes that the author made between one draft and another could not be traced to any comment made by his colleagues. This can be understood by reference to what I have called the out-of-step phenomenon, which adds to the complexity of receiving numerous differing reactions. When an individual goes off to work on the first draft of a lesson, he and his course team usually share several ideas about what he is trying to produce. However, as the author works on his draft, his ideas develop and he sees other ways of dealing with his topic, and other objectives that the students might be asked to achieve. When he brings his first draft back to the course team, they are bound to be out-of-step with his new thinking. Some of them may have changed their views of the role his lesson should play in the course, as a result of working on their own lessons, and some of them will have been so busy with their own work that they have not given his lesson another thought since the unit outline was first discussed. As a result of this divergence of opinion, the author and his commenters inevitably compare his draft with different images of what the lesson should be. (Riley, 1984, pp. 22-3)

At the same time as this divergence or disorder grows, pockets of order are apparent within the process, as the ‘increasingly sophisticated’ efforts of individual writers produce more and more focussed drafts. This is explained by Riley as follows:

This divergence of images will increase with every draft, for many team members cannot pay sufficient attention to each other’s lessons even to catch up with the author’s views at the time he wrote each draft; and they are getting more involved with the preparation of their own material, as time goes by, and so are increasingly reluctant to think about the course as a whole. ... As the author carries on exploring the topic of his lesson and developing his expertise, the reasons for his drafting decisions become increasingly sophisticated and embedded into their subject matter context, even though the structure and argument of the lesson may be becoming clearer with each successive draft. One way of looking at this divergence is to see the lesson as a living thing, continuously growing and changing in its author’s mind. At intervals he prepares a static account of this living entity, a ‘snapshot in time’, in the form of a written draft, which he circulates for comment. (Riley, 1984, p. 24)

The notion of local rather than global theorising is also explicit in Riley’s findings. Each course is a product of particular people working at particular
times in particular circumstances. Global generalisations are not viewed as helpful, as the following comments make clear.

For it is my experience that the actual tasks done are very variable, between institutions, between teams and between authors. It is not just a matter of whether the work is done by teams or not; there are also differences depending on the precise system of roles in use. (Riley, 1984, p. 36)

... stress the importance of the individual creative role, that producing distance teaching materials cannot and should not be a simple technical task. I asked a question about this in my survey: ‘How different would a team’s decisions be if in the same context a different set of individuals had formed the team?’ Almost without exception, my informants were quite sure that individuals mattered.

‘No, they wouldn’t produce the same course, whatever the subject matter, the approach etc. would be very different. ... And above that you still get a lot of variation, because it grows out of interactions between people and between people and subject matter, it’s an organic thing.’

‘It would be different, because the course team is so open, even with some five page outlines, a course continues to redefine itself even when printed. Even if one took those outlines as a constraining brief, it could still be radically different, because of the course team differing and because of accidents, disasters and luck.’ (Riley, 1984, pp. 45-6)

The claimed resonance between Riley’s work and elements of chaos theory is of course built on Riley’s own analysis of her data, which was certainly not from a chaotic perspective. It is interesting to speculate whether examination of her original data and transcripts might reveal further congruence.

Another contribution is provided by Kelly (1988), who challenges the prescriptive role often adopted by educational developers, and calls into question the assumptions that appear to underpin their practice. Claiming that the current situation is leading to ‘superficial enhancement of the quality of teaching materials for distance education’, she briefly outlines an alternative, espousing that the developer should play ‘a reactive rather than a proactive role in that it serves the perceived needs of teachers rather than attempting to reorder their priorities’ (Kelly, 1988, p. 33).
Forster and Pfahl (1989) discussed the role of the ‘distance education consultant’ in the corporate and academic arenas. As implied by their use of terminology, they see instructional designers as consultants, whether working internally or externally to their own institutions. However, they believe that appropriate cultural behaviour should be used, depending on the setting, claiming that agenda setting varies markedly between corporate and educational organisations. As they comment,

In educational environments academics have highly developed personal autonomy and relate to the institution in highly individualistic ways. The mindset to work successfully with academics requires distance educators to adjust constantly to individualistic agenda setting, in contrast to the corporate environment where group agenda setting is more clearly established. (Forster and Pfahl, 1989, p. 4)

In arguing for the consultant approach, they identify a range of models of consultation, and favour the process consultation approach, wherein the client owns the problem and the consultant acts in a non-directive manner. That is, the task of the distance education consultant has its focus on empowerment, and the authors conclude with suggestions of intervening strategies that consultants can use to facilitate such empowerment.

An effort to capture the reality of educational development/instructional design in action is found in Developing Open Courses (Parer, 1993), wherein a number of contributors attempt to provide ‘a series of tales from the mud.’ Although some of the cases show evidence of systematic approaches, the overall impression is not one of strong links to traditional instructional design theory, one pair of authors being bold enough to title their contribution ‘Course development without instructional design’ (Nation and Walker, 1993).

The only explicit reference to chaos theory is within my own contribution (Murphy and Taylor, 1993), but it is still worth noting a couple of examples where the discussion presents similar ideas. Jackling, in outlining the writing process in which he engaged, declares that

... it also confirmed that educational objectives work best when they are allowed to evolve as ideas take shape during the writing process. It is truly a dynamic process in which writing leads to the generation of new ideas. These feed back into the further development of educational objectives, which in turn aid the ongoing writing process. (Jackling, 1993, p. 51)
The sympathy of such ideas with the iterative nature of dissipative structures, along with the vital role of positive feedback, has already been noted a number of times.

Adopting a constructivist position, also previously considered, Beauchamp et al. (1993) reflect on what they consider to be a successful development of distance education material and note:

> The recollection we are now engaged in is a reconstructed logic which tends to highlight actions as a series of purposive, sequential steps. Instead, a lot of often unconnected activities were happening at the same time. We could best thematise our beginning as confusion because we really did not know where we were going and we did not have a preconceived image of what the courses would look like. (Beauchamp et al., 1993, p. 217)

It does not seem an unreasonable suggestion to link this description to an image of order arising from chaos. The link becomes more explicit as the authors outline their struggles to write the study modules:

> When we began, we locked ourselves in an office, shut off the telephone, turned on the computer and brainstormed ideas, making initial entries on the computer and brainstorming some more. We entered possibilities for topics, sub-questions and activities ... and ran off a hard copy printout. Then we worked with the hard copy and added to it, deleted from it and generally changed it around. ... This cycle was repeated until we were satisfied ... (Beauchamp et al., 1993, p. 229)

**Conclusion**

Chapters 2 and 3 have completed the first strand of this thesis, a theoretical investigation of instructional design in distance education. This has been done by first investigating the recent emergence of chaos theory, and then making connections with literary theory, education and, finally, instructional design. Links have been made with other approaches in the literature which have resonance with chaotic concepts. All the while, the aim has been to establish a credible case for the contention that the conceptual lens of chaos theory has much to offer the theory and practice of instructional design. In doing so, the investigation in this strand has raised questions about the practice of instructional design, which are to be addressed in the second strand, the empirical investigation.
Specifically, an aim of my research with instructional designers is to search for evidence of patterns that reveal chaotic processes at work in the design and development of distance education courses. Are the circumstances under which instructional designers work rich in complexity? Do they have to function in open systems? Are such systems moving to far-from-equilibrium conditions? If so, how do they go about seeking order within the chaos of their working environment? Is there evidence of instructional designers using chaos and complexity to encourage creative outcomes? Can their work be categorised as a process of becoming, or is it simply a matter of being? That is, does time and its consequences have significant impact on their working environment?

These and related questions are pursued in the second strand of this thesis. Appropriate methodology is required to pursue this aim, and my choice is discussed and justified in the next chapter. Basically, qualitative methods were chosen to allow the richness of the data to emerge, through the development of detailed descriptions of design projects. This was accomplished by choosing a small number of projects to be researched thoroughly, rather than investigating a large number of persons and projects superficially. The analysis of the data which emerged are then analysed in Chapters 5 to 7.
Chapter 4

Methodology

... qualitative inquiry places a high premium on the idiosyncratic, on the exploitation of the researcher’s unique strengths, rather than on standardization and on uniformity. Hence, investigators ... will do things in ways which make sense to them, given the problem in which they are interested, the aptitude they possess, and the context in which they work.

Eisner 1991, p. 169

Introduction

As heralded in Chapter 1, the empirical contribution of this thesis is based on qualitative methods. Simply stated, I have gathered data from eight instructional designers working on specific projects in four tertiary distance education settings in Hong Kong and Australia. These eight case studies have been compiled through the use of recorded interviews and, to a lesser extent, diary accounts, letters and electronic mail messages. This chapter provides a detailed discussion of the methodology and data gathering processes, leading to my analysis of the data in the following three chapters.

The need for and trend towards greater use of qualitative methods in distance education has been outlined by Morgan (1984; 1990; 1992). His argument (Morgan, 1984) is that distance education research has historically been over reliant on a technical rationalist perspective. Specifically, Morgan contends that case study research can be fruitfully applied to theory building (Morgan, 1991). Though his arguments are principally concerned with research on student learning, the ideas can equally be applied to research on instructional designers.

The eight case studies upon which this thesis is largely based were compiled using a modified form of participant observation, the diary–diary-interview method (Zimmerman & Wieder, 1982). Further, by working with instructional designers in a variety of institutions in two countries, the research gained a multi-site perspective (Miles & Huberman, 1984), thus increasing its potential generalisability (Schofield, 1989). The issue of generalisation is pursued later in this chapter (see p. 83).
The method of data gathering thus established, this still left me with the problem of data presentation. What I required was a basis of interpretation that would be congruent with chaos theory, my principal analytical tool. My search for the ‘interpretive core’ bore fruit in the work of Eisner (1991), with his notion of the ‘critical connoisseur’. Further discussion of this term will be found after some comments concerning my search and the basic tenets of qualitative study.

The search

Though it is easy to summarise the outcome of my search for suitable methodology in a few sentences, this does not of course reflect the time and mental effort that is involved along the way. Many twists, turns and ‘false leads’ were taken, as I struggled with recent and emerging contributions to theory in the postmodern and other veins. The example of the main approach I pursued will serve to illustrate the effort that has been justifiably, and most of the time enjoyably, expended.

With a background in mathematics and science, I became keenly interested in chaos theory, though at first with no idea of connecting it to my research. Stimulated by the now well known contribution of Gleick (1985), I examined journal articles in a variety of fields, delved into the more demanding contribution of Prigogine and Stengers (1984), and played with some wondrous fractal images on the computer.

Slowly, as articles began to appear in the social science literature, I began to make connections with distance education, course design and my research. In an effort to stimulate discussion of chaos in the distance education community, I jointly presented a session on the topic at the 1989 Conference of the International Council for Distance Education (see also Burge, 1993). Considerable discussion ensued, which stimulated me to continue my efforts to apply the concepts of chaos theory to both my work as an instructional designer as well as my research with instructional designers. This resulted in a book chapter, within which I attempted to bring some of the major features of chaos theory to bear on a case study in the development of distance education materials (Murphy and Taylor, 1993). What I slowly came to realise, however, was that I was discovering a tool to help with the analysis and interpretation of my data and my readings of the theory of instructional design, not a basic methodology for my study.
And so the search continued. There was also the creeping realisation that it could be never-ending. That is, no sooner would I alight on the ‘latest’ research approach and become involved with it than something new and exciting would emerge to divert my attention (a potential ‘bandwagon’ effect). The problem has been well expressed by McWilliam (1992):

The most alarming symptom for the doctoral candidate is the sense that the slow but systematic ‘plodding’ inquiry of the past is no longer adequate, in terms of time-frame, to the ‘galloping theory’ of the present. This comes as something of a shock to those of us who plan for years of doctoral work stretching ahead, and who expect that it is appropriate to finish a doctoral thesis a few calendar years after commencement. It means that we either finish post-haste or spend most of our time doing major surgery on earlier chapters that have begun to appear positively anachronistic. This can end up as something of a treadmill, as we chase our academic tails in order to ensure that our work is coherent as well as theoretically contemporary. (McWilliam, 1992, pp. 1-2)

It should be noted that this evolution of thought was taking place after the research was under way. So, while hanging on to shreds of my original thinking concerning theory and methodology, I was seeking to find a more adequate, fitting and explanatory basis for my project. Thankfully, the contribution to which I could feel comfortable aligning myself emerged in the previously-mentioned work of Eisner.

As mentioned, somewhat belatedly I realised that I had become somewhat confused between the methodology I was using to guide my investigation, and the tool or tools of analysis with which I would make sense of my empirical results. Qualitative methods, specifically Eisner’s notion of the ‘critical connoisseur’, would underpin my investigation of instructional designers at work, especially data gathering and presentation, while chaos theory had the potential to analyse the resulting case studies and interpret the instructional design literature.

**Qualitative and naturalistic methods**

Qualitative research is a well established and accepted, though still debated, term in the educational community (Buchanan & Floden, 1989; Fetterman, 1988; Firestone, 1987; Gage, 1989; Hammersley, 1992; 1993). The following discussion
delves in some detail into qualitative methodology, tracing a path from more general considerations through to Eisner’s particular approach to such study.

Those using qualitative methods are most usually seeking:

to describe, decode, translate and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world. To operate in a qualitative mode is to ... attempt to reduce the distance between indicated and indicator, between theory and data, between context and action. (Van Maanen, 1983, p. 9).

That is, research problems which require an interpretive, inductive approach are congruent with the application of qualitative methods. Researchers work on data to both pose and resolve research questions. In fact, such questions and hypotheses often arise during data collection. Thus the reporting and writing up of qualitative research results is often a discovery process, which has led to the maxim that 'qualitative researchers often do not know exactly what they have discovered until they have written it up and passed it around’ (Van Maanen, 1983, p. 253).

Typically, qualitative research begins with an on-the-spot assessment of the social situation in which the study will take place. A data base begins to emerge through inspection and observation of specific local features, and tentative generalisations emerge which, in the ideal, leave no variance unexplained. To the greatest extent possible, people are observed engaging in their normal activities, unhindered and uninhibited by the observation of the researcher. So, qualitative researchers are interested in the everyday activities of people in their natural world, not in an artificial experimental setting.

The emphasis in qualitative work is on the interpretation of description, in an attempt to answer the question ‘What is going on here?’ by analysis of viewpoints from a variety of sources and perspectives. This goal to present a coherent description of a claimed reality can be reached in many ways, so that qualitative research becomes a craft, depending on the aesthetic, moral and professional standards held by researchers. Specific techniques employed by qualitative researchers include participant observation, interviewing, case studies, archival data collection, historical analysis, diary methods and conversational analysis. Again, the tendency is to use and rely on a variety of data sources.
The term ‘naturalistic’ is used by some (Guba, 1981; Guba and Lincoln, 1982; Tierney, 1988) to describe what others might view as qualitative. An examination of some of the basic ideas of naturalistic study makes this apparent. Naturalistic inquiry is based on two sets of concepts:

One set of concepts is the naturalistic-ecological hypothesis which claims that human behavior is so significantly influenced by the context in which it occurs that regularities in those contexts are often more powerful in shaping behavior than differences among the individuals present. In this view, the behavior of people ... is seen as powerfully influenced by the organizational context in which it occurs. ...

The other set of concepts basic to naturalistic inquiry is the qualitative-phenomenological hypothesis. This essentially holds that one cannot understand human behavior without understanding the framework within which the individuals under study interpret their environment, and this, in turn, can best be understood through understanding their thoughts, feelings, values, perceptions, and their actions. (Owens, 1982, p. 5)

The basic assumptions of the naturalistic inquirer are that:

1 In the real world, events and phenomena cannot be teased out from the context in which they are inextricably embedded, and understanding involves the interrelationships among all of the many parts of the whole.

2 It is illusory to suppose that interaction between inquirer and subject might be eliminated. Indeed, this dynamic relationship can make it practicable for the inquirer, himself or herself, to become the data-gathering and processing ‘transducer.’

3 Generalizations are suspect, at best, and knowledge inevitably relates to a particular context.

4 Qualitative methods—which emphasize both inner and outer knowledge of man in his world – are preferable. As Filstead puts it, ‘Qualitative methodology allows the researcher to get close to the data, thereby developing the analytical, conceptual, and categorical components of explanation from the data itself.’

5 Theory emerges from the data themselves in the sense that Glaser and Strauss describe ‘grounded theory.’

6 The naturalistic inquirer, believing in unfolding multiple realities (through interactions with respondents that will change both them and the inquirer over time) and in grounded theory, will insist on a design that unfolds over time and which is never complete until the inquiry is arbitrarily terminated as time, resources, and other logistical considerations may dictate. (Owens, 1982, p. 6)
Owens (1982) explains the relationship between naturalistic and qualitative study as follows:

Although ‘naturalistic’ alludes to ways in which one may seek to examine reality and these ways emphasize the wholeness and phenomenological interrelatedness of the real world, ‘qualitative’ alludes to the nature of the understanding that is sought. Qualitative inquiry seeks to understand human behavior and human experience from the actor’s own frame of reference, not the frame of reference of the investigator. Thus, naturalistic inquiry seeks to illuminate social realities, human perceptions, and organizational realities untainted by the intrusion of formal measurement procedures or reordering the situation to fit the preconceived notions of the investigator. The qualitative nature of the resulting description enables the investigator to see the ‘real’ world as those under study see it. (Owens, 1982, p. 7)

This resonance between naturalistic and qualitative study, along with the assumptions previously listed, were meaningful as far as my study was concerned, and relate closely to Eisner’s views of qualitative inquiry, as outlined in the next section. My aim was always to try to catch the participants’ perceptions of their working world. Further, as Owens’s sixth point explained, the research design evolved during the period of data gathering, with different facets of the design assuming greater or lesser importance as the work continued. This was certainly true of the increasing reliance on the interviews over the diary accounts.

The result of qualitative study must be credible, and I was keen to ensure that my work should fulfil this basic requirement. Procedures used to enhance the credibility of qualitative study (Owens, 1982) include:

- prolonged data-gathering on site—plenty of time is essential for the researcher to dispose of predispositions, and progress from initial impressions through to a deeper level of understanding. This was a clear feature of my study, in that months were spent with most of the participants. For example, in the main exemplar case study, which was the longest, the interviews alone spanned ten months. Ongoing contacts and discussions of issues concerned with instructional design in distance education have continued with two of the participants since the time of data gathering.
• triangulation—a number of sources are used and cross-checked for verification, accuracy and the testing of perceptions. This tended to be a minor facet of my work. However, elements of triangulation emerged particularly with the Hong Kong participants, all of whom were working on the same course, albeit on different subjects. Their perceptions of the course development was triangulated to verify emerging ideas.

• member checks—data is continuously corroborated with participants or others involved in the events being studied, basically to ensure credibility. Participants were the main source of member checks in this study. For example, all interview transcripts were sent to the participants for their checking and corroboration.

• collection of referential adequacy materials—materials relevant to the site or events under study can be collected. Although this didn’t take place with all participants, I was at least able to view some of the course materials, and was sent examples of institutional policies and procedures on course design and development.

• development of thick description—materials and information gathered should be synthesised, integrated and related in order to make the description real and vivid for the reader. A continual sorting, sifting, choosing, categorising and re-ordering of material from the interviews and other sources (such as diary extracts) has resulted in the ‘thick description’ found in this thesis. The longest chapters are those involving discussion of the interviews, and an extensive case study of one participant is found in the appendices.

• engage in peer consultation—ideas and progress should be discussed with qualified peers, to check thinking, raise questions and concerns, and talk through problems. Not surprisingly, the bulk of this consultation has been with my supervisor. However, during the past five years or so, there have been frequent opportunities and occasions when I have tested my ideas with knowledgeable peers, both in discussion (such as at conferences) and in print (with articles and book chapters).
The Critical Connoisseur

As mentioned, Elliot Eisner (1991) has recently added to the store of literature on qualitative methodology with 'The Enlightened Eye: Qualitative Inquiry and the Enhancement of Educational Practice'. Eisner draws on substantial theorising (Eisner, 1976) and experience concerning connoisseurship and criticism within educational research and evaluation. With a background in the visual arts, it is not surprising that Eisner claims:

... seeing is central to making. Seeing, rather than mere looking, requires an enlightened eye: this is as true and as important in understanding and improving education as in creating a painting. (Eisner 1991, p. 1)

Based on the foundations of methodological pluralism and organisational holism, Eisner’s aim is to broaden views on what it means to ‘know’ (Eisner 1991, pp. 2-3). Indeed, he argues for the following premises, with which I have come to concur. Not only do they match my personal experience, but they provide a cogent set of assumptions upon which my study can be based.

1 There are multiple ways in which the world can be known ...

2 Human knowledge is a constructed form of experience and therefore a reflection of mind as well as nature: knowledge is made, not simply discovered.

3 The forms through which humans represent their conception of the world have a major influence on what they are able to say about it.

4 The effective use of any form through which the world is known and represented requires the use of intelligence.

5 The selection of a form through which the world is to be represented not only influences what we can say, it also influences what we are likely to experience.

6 Educational inquiry will be more complete and informative as we increase the range of ways we describe, interpret, and evaluate the educational world.

7 Which particular forms of representation become acceptable in the educational research community is as much a political matter as an epistemological one. New forms of representation, when acceptable, will require new competencies. (Eisner, 1991, pp. 7-8)

Plainly, some of the premises are more controversial than others, though all are becoming increasingly accepted in educational research. It is unlikely that many
researchers would strongly contest the fourth and the sixth, while the first has been the subject of debate in most disciplines. The second holds a particular fascination for me with my background in mathematics, within which the historical argument over whether mathematics is created or discovered has occupied the thoughts and writings of many famous mathematicians.

Eisner beautifully and persuasively illustrates these premises, particularly the first, with a vivid illustration. In 1985, the American Educational Research Association invited four researchers to analyse a videotaped classroom lesson, a nationally televised event by the US Secretary of Education, a former professor of philosophy. Two of the analyses are included in Eisner’s book, his own educational criticism and the other the viewpoint of a linguist, Roger Shuy (Eisner, 1991, pp. 130-49). Each contribution is highly informative, capturing and presenting the ‘reality’ of the event in ways that enhance understanding of the admittedly rather artificial classroom lesson. The ‘realities’, though, are at the same time completely different; Eisner ‘takes us there’ through his use of expressive language and insightful comment, while Shuy adopts a quantitative approach, revealing hidden patterns within the exchange between teacher and students.

As intimated earlier, Eisner equates the ‘enlightened eye’ with attainment of the skills of a critical connoisseur. An effective qualitative researcher must develop connoisseurship, the art of appreciation, which includes ‘the ability to make fine-grained distinctions among complex and subtle properties’ (Eisner, 1991, p. 63). Specifically, it ‘is the means through which we come to know the complexities, nuances, and subtleties of aspects of the world in which we have a special interest’ (Eisner, 1991, p. 66).

The importance of connoisseurship, to Eisner, cannot be overestimated — it is at the heart of effective qualitative research.

The development of perceptivity, or what I have called connoisseurship, is critical for qualitative work of any kind because it is the achievement of experience ... that provides the material from which patterns are perceived and interpretations are made. If researchers have no consciousness of what is significant in a setting, it is unlikely that anything subsequent will occur that is of interest. ... Theories and concepts, schemas and categories, provide cues with which to look, but cues are only pointers — one still must be able to experience the qualities pointed to. In this sense, theoretical language — indeed, any language — can act as a heuristic that makes the search more efficient,
but it is in the refinement of the sensibilities that the phenomena themselves are made real in experience. (Eisner, 1991, p. 230)

On its own, though, connoisseurship is not enough for the researcher. It is, for example, a private act, a ‘quiet act of appreciation’ (Eisner, 1991, p. 85), and thus needs a public face or presence. Criticism is this link, criticism being the art of disclosure, the ‘art of saying useful things about complex and subtle objects and events so that others less sophisticated, or sophisticated in different ways, can see and understand what they did not see and understand before’ (Eisner, 1991, p. 3). The critical connoisseur thus helps others to increase perception and deepen understanding of an educational situation or event.

Eisner posits four dimensions of educational criticism (Eisner, 1991), not as a prescriptive tool but as something with heuristic utility, a general structure within which critical connoisseurs operate. The dimensions are:

- **description**, the means by which readers visualise and get a feel for a process or place;

- **interpretation**, the explanation of meaning, an accounting for the place or process;

- **evaluation**, the appraisal and determination of educational value; and

- **thematics**, the extension beyond the situation—the formulation of themes within an educational criticism (Eisner, 1991, p. 104)—also known as naturalistic generalisation (Stake, 1975).

Having adopted this perspective, Eisner claims that:

qualitative inquiry works best if researchers remain aware of the emerging configurations and make appropriate adjustments accordingly. A preformulated plan of procedure indifferent to emerging conditions is the surest path to disaster.

Flexibility, adjustment, and iterativity are three hallmarks of qualitative ‘method’. Even aims may change in the course of inquiry, depending what happens in a situation. Such an attitude toward method is diametrically opposed to the aspiration to bring everything under control so that effects can be unambiguously explained (Eisner, 1991, p. 170).
Eisner further posits that there are six features of qualitative studies. The first is that they are field focused; that is, the qualitative researcher is interested in what is going on, and a qualitative study is usually non-manipulative. As Eisner explains, ‘On the whole ... qualitative researchers observe, interview, record, describe, interpret, and appraise settings as they are’ (Eisner, 1991, p. 33). A clear aim of my research was to focus on the reality of the work of instructional designers, rather than on how they or others perceived it should happen.

Qualitative researchers also use the self as an instrument. This refers to the way that the researcher ‘engages the situation and makes sense of it’ (Eisner, 1991, p. 34), that is, their perceptive and interpretive abilities. The researcher doesn’t approach data gathering ‘clipboard in hand’, but is able to perceive important behaviour and interpret its significance—‘the ability to see what counts’. The other side of this feature is that I was an instructional designer studying instructional designers, with the associated potential problem that I was so much inculcated into the culture that I might miss important behaviour by being too close. The problem has also been called ‘fighting familiarity’ by Delamont (1992, p. 40), who discussed the issue in terms of a researcher failing to suspend commonsense assumptions, merely ‘thinking as usual’ and subsequently failing to ‘see’ what was going on. Peer consultation, as discussed in the previous section, can be an effective way of overcoming this danger.

Eisner’s third feature of qualitative study is its interpretive character, both in terms of explaining why something is taking place and what it means to those involved. That is, qualitative researchers ‘try to account for what they have given an account of’ (Eisner, 1991, p. 35), and attempt to probe the motives of actions they’ve described. The explanations may require the application of constructs from the social sciences, or the creation of new theory. In my case, this involves the interpretation of description through the application of chaos theory, with has roots in science, but which is increasingly being used in the humanities.

The interpretation also involves the issue of meaning, especially in terms of the motives and the quality of experience of those participating in the study. How does an instructional designer react when suggestions are not acted on? What might prompt them to take a stand on an issue? What gives them satisfaction in their work? Again, conceptual tools can assist with the interpretation of meaning, but other inputs must also be used, such as the historical antecedents of a context.
Fourthly, qualitative study involves the use of expressive language and the presence of voice in text—as Eisner (1991, p. 36) explains,

The kind of detachment that some journals prize—the neutralization of voice, the aversion to metaphor and to adjectives, the absence of first person singular—is seldom a feature of qualitative studies.

It is also related to efforts to remove falsity, to move away from the illusion of pure objectivity in social science research. For me, this has meant an explicit effort to ‘personalise’ my writing in this thesis, as I strive to use language that will engage the reader, seek their empathy (as well as showing my own) and promote their understanding of the people and situations being studied and analysed. The reader should be assisted by the quality of the writing and the use of the expressive voice to experience the situation.

Attention to particulars, in an effort to allow readers to feel the distinctive characteristics of a case, is the fifth feature identified by Eisner. At the same time, carefully chosen particulars are used to exemplify, in order to locate them in a general theme.

The sixth distinctive feature of qualitative study is its criteria for judgement—coherence, insight and instrumental utility. This is a recognition that all approaches to research are in essence a matter of persuasion. The ‘facts’ of qualitative research seldom speak for themselves. It is up to the researcher to build a reasonable case through insightful reasoning and persuasion.

Not surprisingly, especially given Eisner’s first premise concerning multiple views of reality, the notion of objectivity is one towards which he turns his attention (Eisner, 1991). In doing so, he uses Newell’s (1986) distinction between ontological and procedural objectivity. Ontological objectivity is isomorphic with the usual notion of objectivity, being the perception, understanding and representation of things as they really are. Procedural objectivity is focussed on methods which aim to eliminate personal judgement in the study and analysis of situations under study—‘objective’ testing is an obvious example. A common perception of the research enterprise is that subjectivity is untrustworthy, so that the aim is to use procedurally objective methods to obtain an ontologically objective result. Eisner’s claim is that ‘ontological objectivity cannot, in principle, provide what we hope for and that procedural objectivity provides less than we think’ (Eisner, 1991, p. 43).
The criticism of ontological objectivity rests partly on the well known views of Popper (1959) concerning our inability to verify the truth of claims, and arguments concerning our knowledge of reality. Other difficulties involve the framework-dependent nature of perception, and the limits of representation. The achievement of ontological objectivity, the quest for certainty, is thus perceived as a lost cause.

Procedural objectivity is also brought into similar doubt, but more in terms of the usefulness of its outcomes than its fundamental principles. Important to the argument is that the outcome of procedural objectivity, consensus, ‘provides no purchase on reality, it merely demonstrates that people can agree’ (Eisner, 1991, p. 47).

The result of rejection of ‘standard’ notions of objectivity does not necessarily lead to some form of radical subjectivism, however. Eisner argues that claims of a resultant ‘Tower of Babel’ are misplaced, and are more indicative of devices or tactics to pressure researchers to accept a certain epistemology. Consequently, subjectivity is celebrated as virtuous, in the manner expressively expounded by Peshkin (1985).

My subjectivity is functional and the results it produces are rational. But if they are rational only to me and no one else, not now or ever, then I have spawned illusions and my views are bound to be ignored. When I disclose what I have seen, my results invite other researchers to look where I did and see what I saw. My ideas are candidates for others to entertain, not necessarily as truth, let alone Truth, but as positions about the nature and meaning of a phenomenon that may fit their sensibility and shape their thinking about their own inquiries. If, somehow, all researchers were alike, we would all tell the same story (insofar as its nondenotable aspects are concerned) about the same phenomenon. By virtue of subjectivity, I tell the story I am moved to tell. Reserve my subjectivity and I do not become a value-free participant observer, merely an empty headed one ... (Peshkin, 1985, p. 280)

Taking the argument further, Eisner attempts to resolve the dichotomy implicit between the terms objective and subjective by introducing the transactive, the product of the interaction between the two terms. In a proposition derived from Dewey, Eisner argues that all we know about the world is mediated by the mind. As a result,

since what we know about the world is a product of the transaction of our subjective life and a postulated objective world, these worlds cannot be separated. ... what we have is experience—a transaction,
rather than independent subjective and objective entities. (Eisner, 1991, pp. 52-3)

Given this position, what is the test of qualitative research that makes it believable? Three features of a qualitative narrative, or educational criticism, are identified as paramount:

• coherence—the ‘tightness’ or quality of the argument, whether it ‘rings true’. Is the narrative consistent and logical? Are there claims or connections that ‘just don’t fit’? This feature is closely related to structural corroboration (Eisner, 1986) and triangulation.

• consensus—the extent to which readers of the narrative concur with the analyses and interpretations. It is a matter of agreement, obtained by persuasion and argument.

• instrumental utility—basically usefulness, leading to comprehension, enlightenment and anticipation of the future (in terms of guides, rather than prediction).

It is this third feature that Eisner perceives as the most important test of a qualitative study.

Allied to these concerns are arguments related to credibility and validity, and Eisner raises similar points to some of those discussed at the end of the previous section. He also introduces the idea of referential adequacy, the ‘extent to which a reader is able to locate in [the educational criticism’s] subject matter the qualities the critic addresses and the meanings he or she ascribes to them’ (Eisner, 1991, p. 114). In this sense the research is keenly empirical, in the perception and interpretation of the qualities present in the study. Through the referential adequacy of the narrative, we ‘are able to see what [we] would have missed without the critic’s observations’ (Eisner, 1991, p. 114).

The usefulness of qualitative accounts is also an issue that must be faced by those adhering to such methods. In other words, what lessons can we learn from a qualitative narrative or educational criticism? How does the notion of generalisation apply to qualitative research in general, and this project in particular?
Bruner (1973) explained generalising as going beyond the information given: it also involves the transfer of what has been gleaned from one situation to another (Eisner, 1991). Generalisation is thus closely related to learning, in that learning requires transfer to have occurred. The statistical generalisation that takes place in most quantitative study can thus be seen as a more specific or special case of a general process. In such study, the use of random selection enables formal inference. Other ways by which inference is made (Eisner, 1991) include:

• attribute analysis—an image of the characteristics of something is used to identify their presence in our experience; and

• image matching—we store generalised images, which help us to find something by matching a pattern we see with an image we have remembered.

Our contact with the qualitative world is thus a vital source of personal generalisation. In addition, we learn or generalise through the perceptions of others in art, literature and common culture. As Eisner contends,

> We listen to story tellers and learn about how things were, and we use what we have been told to make decisions about what will be. ... We see the film *One Flew Over the Cuckoo’s Nest* and understand a bit more about how people survive in an institution that is hell-bent on their domestication. All of these narratives are potentially rich sources of generalization; all contribute significantly to our lesson learning. All are, in a sense, one-shot case studies. (Eisner, 1991, p. 202)

The kind of generalisation that takes place from qualitative study is thus different to statistical generalisation—it’s logic is softer, making its nature more analogical. Readers of a qualitative research study will generalise in the sense that they determine whether the research findings fit the situation in which they work. The researcher might say something like this: ‘This is what I did and this is what I think it means. Does it have any bearing on your situation? If it does and if your situation is troublesome or problematic, how did it get that way and what can be done to improve it?’ (Eisner, 1991, p. 204)

Eisner (1991) also uses the term retrospective generalisation, referring to the process by which we view our past experience in a new sense when we come into contact with or formulate an idea that changes our perceptions. In this way,
our past is reconstructed by such new ideas—the reconstruction of experience that Dewey regarded as powerful in learning.

Once a Darwinian idea emerges, for example, the past never appears the same. Nor does the future. We have acquired a new perspective for making sense. When we make sense of experience we already have, the generalization can be regarded as retrospective. (Eisner, 1991, p. 207)

Eisner concludes his consideration of the issue of generalisation by reminding us of its limits, thus clearly stating the erroneous nature of many prescriptive research conclusions. His approach can thus be described as a contingency perspective.

Generalizations in education, whether produced through statistical studies or through case studies, need to be treated as tentative guides, as ideas to be considered, not as prescriptions to follow. ‘It all depends’ is probably the most useful qualifier to attach to answers about the efficacy of particular educational methods. (Eisner, 1991, p. 209)

So, the spirit of Eisner’s approach implies that to know if instructional design is useful, we need to know how instructional design ideas are used. To know what the effect of instructional design is, its strength and weaknesses, we need to know what instructional designers are doing, and to tell others what we have perceived in ways that are insightful and meaningful. That is a basic aim of this thesis.

**Chaos and qualitative study**

While there is not any necessary direct connection between chaos theory and qualitative study, it is worthwhile to briefly consider any resonance or sympathy that the two separate fields might have. Chaos theory is used in this thesis as a means for analysing instructional design theory and practice, and any affinity between it and qualitative research can serve to produce a coherent and clear argument.

Interestingly, it has always been an aim of most qualitative studies to reveal the complexity of the real world, rather than study individually controlled variables in isolation. One of the first and better known qualitative studies in education was actually titled *The Complexities of Education in an Urban Classroom* (Smith and Geoffrey, 1968). What chaos theory does, then, is provide a new tool or
conceptual lens for analysing the rich and complex data that emerge from qualitative study.

With respect to the issue of generalisation or globalisation, clearly qualitative inquiry and chaos theory take similar stances. Hayles’s claim that chaos theory makes ‘globalization precarious’ (Hayles, 1991, p. 8) reflects similar sentiments to those outlined by Eisner above. Like chaos theory, qualitative study also represents a movement from global to local theorising. Both resist traditional mathematical predictability, the hallmark of traditional quantitative research and Newtonian mechanics. As well, qualitative study does not attempt to isolate individual factors, but accepts the situation under study as one which is under the influence of a multitude of forces from without and within, reflecting an open systems orientation. The respective approaches to objectivity also have resonance with, as discussed, Hayles (1991) strong appeals against the ‘myth’ of objectivity, and Eisner’s thoughtful criticism, as presented earlier in this chapter.

Within education, Cziko’s (1989) observations on possible contributions of chaos theory surmised, as mentioned, that the most useful results will come from descriptive and interpretive research. Equally, Jonassen (1990), in assessing chaos theory’s future in instructional design counselled for greater use of qualitative techniques. For my thesis, the use of qualitative methods, in particular the generally unstructured interviews, allowed scope for the complexity of practice to emerge. The chaos that existed within elements of the case studies was thus given opportunity to emerge, not through prompting, but as it naturally occurred.

It thus appears entirely appropriate to engage in the combined use of qualitative study and the application of chaos theory within educational research and analysis.
Research design

The core of the research design, as outlined in my original proposal, was a modification of the participant-observer technique, the diary–diary-interview method (Zimmerman and Wieder, 1982). The main feature of this method is the maintenance of a running account of activities and practices, which are subsequently further examined and amplified through discussion and interviews based on the written account. The method was modified and strengthened, however, by moving the focus from observation of behaviour to reflection on practice, so that the participants as well as the researcher could come to a clearer understanding of their work practices.

As used by qualitative researchers, the combination of having respondents maintain diaries and then conducting focussed interviews to expand on or to check the consistency of the diarists’ accounts is a way of triangulating actual activity with reported activity. This cross-checking is in recognition of the difference between what people say they do and what they really do. The diaries are annotated chronological records—respondents are requested to keep a record over a specified period, based on a set of instructions. These instructions can range from an ‘open-ended’ approach to tightly specified requirements.

The method has similarities with tracking, which has been described as:

... systematically following the routine of a succession of different role-incumbents over some time period. By periodically switching from one subject to another, observers are eventually able to encounter many of the patterned activities within the setting from a number of different role-bound perspectives. (Zimmerman and Wieder, 1982, p. 119)

So, tracking places the researcher as an overt observer, with the assumptions that the observer can move freely in a given setting and interact with a variety of participants.

Those who agree to keep diaries for the researcher observe and reflect on their own work. By maintaining a log of their daily activities, they are revealing not only their own work practices, but also the practices of those with whom they interact. The next step is to interview the diarists, in order to expand on the notes and discuss related events. This form of tracking allows the opportunity to investigate topics and situations (such as telephone conversations, meetings and
discussions between instructional designers and lecturing staff) which might otherwise be inaccessible.

As it turned out, the interviews formed the bulk of the useful data, for two reasons. The first was simple reality, in that it was difficult to get the participants to maintain diaries of their activities, even for a single part of their working lives. Secondly, the diary records that were kept were not as interesting or revealing as the interviews. This should not have been surprising, of course, and in the event was no real obstacle to the progress of the research. There was no lack of willingness to both be interviewed and to be frank when talking about work experiences. As Eisner has noted, along with counsel concerning the conduct of interviews,

> It is surprising how much people are willing to say to those whom they believe are really willing to listen. In the main, interviews need not—indeed, should not—be formal, questionnaire-oriented encounters. ... Conducting a good interview is, in some ways, like participating in a good conversation: listening intently and asking questions that focus on concrete examples and feelings rather than on abstract speculations, which are less likely to provide genuinely meaningful information. ... It is usually better to focus the interviewee’s attention on the things they have done. (Eisner, 1991, p. 183)

The resultant ‘thick description’ from the interview transcripts includes large amounts of detailed and heterogeneous information. This information has then to be analysed, with the aim of producing a coherent account of the social situation being studied. Naturally, a number of constraints operated during the investigation.

For example, it is unlikely that the single reporting of a specific work practice for one individual is indicative of a pattern of behaviour in a group. Hence, the idea of repetition is a constraint that will normally operate within the investigation. However, if a single reported incident appears to warrant further probing, subsequent data gathering may include measures designed to determine whether such a practice occurs as a pattern.

Analysis of the accounts was a continuous process of reflection and correction that alternated between data gathering (the diaries and interviews), reflecting and theorising about relevant descriptions of the social phenomena under focus. Early experiences with diarists contributed to more meaningful and effective analysis of later contributions—as patterns and practices emerged, these become
foci of interest for the researcher and the diary interviews. New questions arose throughout the combined process of data gathering and analysis that helped in this focussing.

As Zimmerman and Wieder (1982, p. 135) explain:

... as more and more diaries were collected and the results of diary interviews inspected, each successive diary was subjected to increasingly specific and refined interrogation.

In addition, the process builds in a partially self-corrective mechanism. Each question directed at a diary writer, even if it is merely a request for additional detail, functions as an implicit, local hypothesis. Thus, the answers to such questions provide for the possibility of disconfirming some previously held notion. For example, asking why some event did not occur is based on the investigator’s expectation that it should have happened, given what he thinks he knows. Some answers could modify or even radically alter that expectation. Thus, the diary–diary-interview method is in part a continuous process of challenging and refining the investigator’s conceptions.

Data gathering

In August 1990, after a year of development, my doctoral research proposal was presented to a colloquium at the university and approved. On returning from Deakin to Hong Kong, I immediately started the process of finding willing participants to help me in my study. For practical reasons, it was decided to restrict the search to Australia and Hong Kong. In addition, as recommended at the Committee, the first couple of participants were to be in Hong Kong, enabling me to hone the data gathering process more easily before moving on to those who would be working with me at a distance.

A standard letter of invitation explaining the project was sent to all potential participants, with a follow-up letter containing further details once an answer had been received (see Appendix 1, p. 206). Interviews were to be recorded, and transcripts sent to the participants. The first case study, with interviews on the progress of a project in which KC Leung was involved, started near the end of 1990. Feedback from both KC and my supervisor on the transcript helped in refinining and improving my interview techniques, in preparation for the participation of other instructional designers, four of whom started their involvement with the research in 1991. The final three participants joined the
research after I moved from Hong Kong back to Australia at the end of that year.

The interviews were conducted both face-to-face and by telephone—Jane Hammersby and Marilyn Wu contributed by telephone, fax and letter, with some use of electronic mail towards the end of their involvement.

As mentioned, after each interview, a transcription was made and sent to the participant for their comments and amendments. This gave them the opportunity to clarify any points which they believed had not been adequately covered in the interview, and to add any comments they believed might prevent any potential misconceptions or ambiguity. Although some returned transcripts came back with little change, the majority contained substantial new information, sometimes accompanied by additional institutional material.

Reading and re-reading of the transcripts was a strong part of the process of getting to the heart of the data. Over a period of a year or so, issues began to emerge from the data, and I began to keep collections of quotes from the interviews in ‘issue folders’ on the computer. As time passed, more were added, some were split, and some separated into sub-issues. I also decided to choose one of the participants as an exemplar case study to include in the thesis, to give readers the sense of how an instructional design project progresses over a period of time. As the most complete case, in terms of the amount of time spent with it as well as the amount of diary notes, was that of Jane Hammersby, it seemed sensible to choose it. A draft was sent to Jane for her comments, much like the feedback to the interviews, and a final version appears in Appendix 2 (pp. 227-45).

Essentially, Appendix 2 (pp. 208-45) is designed to give sense to each of the individual eight case studies used in this thesis. My involvement with the participants who allowed me to follow their work started towards the end of 1990, and continued until mid-1994. The first seven cases are presented in brief outline, while the final one is presented more fully (that of Jane Hammersby, mentioned above), to provide a closer view of the design and development of a distance education course. Not all the cases are complete, in the sense of being an account of an entire project from beginning to end. Some were started after a project was under way, while others were not followed through until all materials were produced, either because the instructional designer left the project, or for practical difficulties in seeing it to the end.
Brief details of the participants and the periods of data gathering are given at the end of each case. Those with at least five years of relevant work are classified as experienced. My involvement with each participant averaged four months. The core of the research material is the 26 taped interviews, along with supplementary material, which includes diary notes, letters, responses to transcripts, additional institutional material and electronic mail messages.

The following three chapters of this thesis contain the results of the analysis of the data. Each is intimately concerned with the issues that arose in communication with the instructional designers as they wrote and talked about their experiences in preparing self-instructional materials for distance education courses. The split into three chapters follows a quite natural logic. Chapter 5 concentrates on ‘setting the scene’, in terms of the backgrounds of the participants and their views of the role and status of instructional designers. Issues which arose in my interchanges with the participants, such as the perennial problem of time, form the focus of Chapter 6. Thirdly, Chapter 7 is of a more reflective character, as each participant responded to specific ideas or propositions I put to them, such as their reactions to some of the metaphors for instructional designers that have appeared in the literature.

Throughout the three chapters, links are drawn between the issues and the notions about the nature of instructional design raised in Chapter 3. In particular, any explicit resonance or apparent reference to elements of chaos theory is briefly explored. These links are drawn more strongly and in more detail in the final chapter of the thesis.

Some explanation of the names used for the participants is in order. As usual with such research, the participant’s names have been changed to preserve anonymity. The forms of name used, however, reflect those used by the participants. This is particularly apparent for the participants in Hong Kong. There, some local people add a western name to their birth name, while others keep to their Chinese names. As well, it is common for those in that situation to be addressed by their initials. Not only that, but others prefer to be addressed by their Chinese surname prefixed by Mr or Mrs. Thus, in the next two chapters, the names Marilyn Wu, KC Leung and Mrs Wong are all fictitious, but are reflections of the forms of address the relevant participants use in their daily lives.
Conclusion

This chapter has turned the focus from theoretical considerations to my empirical study of instructional designers. It provides the background and sets the scene for them to tell tales of their work, as each relates their experiences with the design and development of distance education projects. The next three chapters are devoted to this presentation and analysis of data, with Chapter 5 giving backgrounds and introductions to the projects, Chapter 6 investigating key issues that arose, and Chapter 7 allowing the participants to more general reflections on their role and contribution.
Chapter 5

The Practice of Instructional Design in Distance Education: Chaotic beginnings

The particular is always more than a match for the universal; the universal always has to accommodate itself to the particular.

Goethe

Introduction

This chapter uses the link of Chapter 4 to move from the consideration of theory informed by practice, in Chapter 3, to a study of practice linked to theory. The heart of the study is the series of case studies of instructional designers in distance education, compiled over nearly four years in Hong Kong and Australia. In particular, central to this and the following two chapters is a clear focus on the words of the instructional designers, in an attempt to capture the reality of the projects from their point of view. This chapter examines origins, in terms of the backgrounds of the participants, as well as their perceptions of their status and role within their institutions. In Chapter 6, issues that emerged from the cases are explored, along with their relationship to the theoretical deliberations which have been outlined in Chapters 2 and 3.

In what follows, most of the extracts, especially from the interviews, are relatively extensive. The reason is chiefly to preserve their contextual nature—the interviews were not a series of questions and answers, but extended conversations which endeavoured to capture the full richness of the projects. As such, the conversations reflected the open systems nature found within much of the development work of the instructional designers. Issues and concerns were not raised or occurred in isolation. All were part of a rich tapestry of functioning social interaction, often affected by factors outside the participants’ control—YL Cheung’s ‘forced’ move into the field, KC Leung’s assignment to a project due to the sickness of a colleague, Jane Hammersby’s fortuitous spotting of an advertisement while working behind a bar in Hong Kong, Mrs Wong’s dominance—all will emerge as examples of the mostly unexpected incidents that can have dramatic effects on a person or project, reflecting the reality of the
very human exploit of crafting effective learning environments for distance learners.

Thus, what is deemed important here is not so much the identification and separation of the multitude of factors, but the recognition and revelation of their complex interplay. Although broad issues are addressed, an effort is made to treat them in relation to others that are concurrently at work, taking a holistic view of the developments as they unfold. As well, attempts are made, not to reveal details of processes, but to show patterns of interaction and iteration, as cycles of activity are discussed and elaborated by the participants.

**Preparing for practice**

It is unrealistic to expect that people make a decision to be an instructional designer as they enter tertiary education. It is not a profession like medicine or law, to which potential practitioners aspire often from an early age. But how and why do people become instructional designers? The case studies, described in full in Appendix 2, present a series of different paths that have been taken, but with some common features. The essence of their experience, though, seems to be one of a progression of roles, not necessarily with firm direction, and not yet definitely at a final destination as far as a career is concerned. Nick Little in some sense spoke for all participants when he summarised his preparation for the role of instructional designer by explaining that ‘I evolved into it and I called myself one.’ *(Interview transcript – 3/3/93)*

All eight participants were working in dual mode institutions, with both on and off campus students. Two of the four institutions had made major commitments to distance education, while for the others, the distance education courses comprised a very small part of total course offerings.

**Backgrounds**

Not surprisingly, all of the participants in the study had backgrounds in education, with varying degrees of teaching experience at different levels. The incidence of any formal study of instructional design was minimal, if not negligible. Rather, each participant had a specialist first degree, to which they had added a graduate qualification in education.
YL Cheung (see p. 220 for his case study) explained how he evolved into his role as follows:

YL. I have a first degree in social sciences in statistics and economics. After graduation, I moved on to secondary school teaching of economics and I did a Post-graduate Certificate in Education, Advanced Diploma in Education and Master of Education. My main elective in my Master’s degree is management of education, and my main interest is economics, education and planning. In other words, I really did not receive any substantial training in instructional design and that kind of thing.

As far as my professional development is concerned, I started working in secondary schools as economics teacher for ten years or so, and then moved on to the Faculty of Education at the University ... as teaching consultant. At that time my main responsibility was teacher training and teaching methodology in economics education. And I guess at that time I have more time and resources to read more widely than simply economics. I worked at [the university] for three years and then I changed.

The reason, he was straightforward enough to admit, was the demise of the type of contract position of which he was a holder. He thus was forced to make a move. His frankness concerning his move into his current job continued, as he outlined his expectations and the reality of his role:

YL. Actually, before I started this post, I never imagined that I would have to spend so much time developing ... materials. And when I first started ... , I felt rather inexperienced and uncertain of what I had to do. And still up to now I feel that I’m not actually giving a lot of suggestions based on theory and that kind of thing, but by a certain kind of unexplainable intuition.

His statement is reminiscent of Kerr’s earlier quoted observation of instructional design decisions being ‘based on some ineffable sense of “what’s right” in a given context’ (Kerr, 1983, p. 48). The comment also led me to ask YL what it was that informed his practice; specifically, amongst a range of possibilities, including theory, experience and exemplar materials, that helped him to do his job.

YL. As I’ve said, I have actually not received any training in instructional design. When I first came here, I had two months ‘vacation’ in the sense that I had not actually started, not given any instructional design work. That two months time I spent, I read a lot, I read what our section has produced in the past, I read texts and references in instructional design work to see what other people say about it. (Interview transcript – 26/2/91)
KC Leung (see Appendix 2, p. 222), another of the Hong Kong instructional designers, had also been a teacher, but in his case he was a foreign language specialist. His qualifications included a doctorate, and he had been a lecturer in the languages department before he transferred to instructional development work.

*KC*  
Before I joined the [department], I had been a language teacher. I had also taught on the Arts Foundation course which was in the distance learning mode. So, I had been a teacher in the DL mode and not a producer of DL materials. In that sense, I was totally foreign to this job. I was given some training, but I was very quickly called to learn on the job ... I picked up various bits and pieces. [A colleague] taught me quite a bit when I started with him—actually I took over a whole project from him, so that what I am doing now should have been done by him if he had not been sick. (*Interview transcript 25/10/90*)

Felicity Simmons (see Appendix 2, p. 215) was another participant with a teaching background, but had made a deliberate career move to become more involved in curriculum development. She had also been quite mobile, moving from the UK to Papua New Guinea, and hence to Australia.

*Felicity*  
I trained as a teacher in Scotland—teacher of biology and geography and I taught for a few years in Scotland, and then I decided I wanted to get out and do some further qualifications which would let me get involved in curriculum design and development. At that time I was interested in the fact that in Scotland there was no curriculum in the secondary schools for, what would you call it, social subjects, subjects which were related to the world out there, the real nitty-gritty; drugs, sex, rock and roll, those sorts of things and all sorts of issues like unemployment, how to deal with the bureaucracy, those sorts of things. They weren’t part of the curriculum anywhere.

So I did then a Masters in Public Health, which was one of the few courses where I could specialise in distance education at the same time, and I decided that this distance education would be the up and coming sort of area that I could maybe angle towards, so I did a Masters in Public Health and a thesis in distance education for health. After I’d finished my Masters, I worked in research for a few years. I worked in ... medical education which dealt with research in distance education for medical workers—that was an 18 month contract—and then I got another contract with the Scottish Council through research in education in Edinburgh and worked on a schools project in settlement. Then I decided that, really because of the pressures of the short term contract, in research at that time it was getting more and more difficult and you having to move around Britain if you wanted to pick up research work in specialist areas, so I decided that the best thing to do would be to go abroad and get a longer term contract and actually try working out some of the theories that I had been using in a new society. I was interested to see if it worked.
... I went to Papua New Guinea and worked there for three years with the education department in the College of External Studies, it was called. The external studies was dealing with secondary school students and offering an alternative to the National School System. After that I managed to get a job in their Health Department which was working with development, curriculum development, for health workers, which was a project which I ran for four years. I then decided that I had had enough of Papua New Guinea, being stuck out there, and decided that it was about time that I got back into an academic environment and push the career along a bit more. (Interview transcript – 6/10/92)

And so Felicity moved to a university in Australia, a dual mode institution at which she had been for nearly two years at the time of the interviews.

The main exemplar case study, presented in Appendix 2 from page 227 to page 245, gives detail of an instructional design project which involved one of the participants, Jane Hammersby. Jane had a background with remarkable similarity to Felicity, in that after initial professional experience she moved to the Asia Pacific region, and from there to a dual mode university in Australia:

Jane I’m actually a qualified zoologist, and I did a postgraduate teaching certificate ... in the UK. I was unable to find a research/biological job, but was employed by the pharmaceutical industry for training medical reps. Hence my drift from zoology towards human biology. When I was doing that, my boss was quite keen on producing self-learning material for the training of medical reps in the field, instead of having to drag them into headquarters. So, we started doing, as in those days ‘programmed learning’ manuals, which we used to send out. Also I was involved in co-ordinating correspondence learning for a professional qualification for medical reps amongst our reps in the company. So that was my first meeting with distance education.

Then I left England and went to Hong Kong, and started off as a barmaid, and responded to an advertisement ... in their mind my strengths were the involvement with self-learning and with a medical profession, because at that time the Institute of Medical and Health Care was starting up. So I was employed ... with special responsibility to the Institute, as they were making a big drive towards self-learning as well. Then in my last year, ... I took on a couple of projects which were, as you know, to all intents and purposes, distance learning self-contained packages on a couple of programmes which were being written. ...

From there I applied for the job down here, and it was recognised, I believe, that I didn’t have much knowledge of the implication of distance, although I was quite competent as an instructional designer, working with a range of staff, developing self-contained packages in some variety of media. And again, when they employed me down
here, it was because the nursing programme was going to become external. \textit{(Interview transcript – 26/9/91)}

Nick Little’s (see Appendix 2, p. 211) background specialism was horticulture, and had an interesting tale to tell concerning his experience with academic life:

\textit{Nick} \hspace{1cm} When I first joined the [college], I was a scientific officer. When the [college] was formed, I couldn’t be classified as an academic because I didn’t teach, even though I was, and am, an academic. I wasn’t transferred across at the right classification, according to the union. So I was put on to the administrative scale. I complained to the Principal, who later became the Dean, and he said to me, and I quote, ‘It’s not what you’re called, it’s what you do.’ This created some problems. What happened was that a reclassification/reallocation of salaries came along, and I was becoming a senior administrative officer, with no administrative function. And we discovered that I was earning more than the lecturers on the scale on which I should have been originally allocated. As it turned out, they couldn’t do anything about it. So I was actually a senior administrative officer, but I had academic freedom, I refused to sign time sheets (I think they are a lot of bullshit anyway) and so on. It happened that some time later the Dean said ‘It’s not what you do, it’s what you’re called.’ And I said ‘Yes ..., why didn’t you fix that up a few years ago?’

Anyway, I called myself an instructional designer when the Distance Learning Centre was set up ... because that’s what I was. It was what I considered my function was, but the Principal called me an editor, because he refused to understand what I did, he didn’t want to know. So I called myself an ID and everyone else did.

This explains Nick’s earlier quoted comment concerning the evolution of his role, and has links to other issues to be discussed later including credibility and status.

\textit{Nick} \hspace{1cm} Now who did I have respect from? That’s an interesting question—I think that the administrative staff respected me more than the academic staff, because the academic staff didn’t know what I did either, because I hadn’t worked with anybody except [an academic colleague], he was the only one, and he and I have enormous respect for each other because we worked together and he understands what I do. And nobody else appeared to understand what an instructional designer does.

So, how did I become an instructional designer? I evolved into it and I called myself one. \textit{(Interview transcript – 3/3/93)}

Marilyn Wu (see Appendix 2, p. 208) was a Hong Kong educator who had gone overseas to the UK to improve her qualifications and experience, obtaining a Masters degree in media education. Returning to Hong Kong, she had
anticipated obtaining a Senior Lecturer position at a tertiary institution, as she explains:

_Marilyn_ ... in ‘81, when they first advertised the positions— that is, our first generation instructional designers— I did apply. I joined the [institution] in ‘84... In ‘81, when they first advertised the ... position, they did make it an SL position. So I did apply in ‘81. And then when I received the offer, they said that because I didn’t have enough post-qualification experience—at that time I’d just come back from England and I joined a College of Education, but only for a few months— they said that my post-qualification experience was not long enough. So instead of giving me an SL position, they gave me a Lecturer position. And therefore I didn’t join them— I declined the offer. (Interview transcript – 31/1/92)

As the offer in 1984 was at SL level, Marilyn joined the staff and obtained instructional design experience there before moving to Australia six years later. She joined a university that was designated as a distance education centre, working as an Instructional Designer.

The picture that emerges of the participants whose case studies form the empirical input of this thesis is that of a group of experienced educators, each of whom found some attraction or deliberately sought a position in which they could engage in educational development work. The interest was sparked, not so much in distance education _per se_, but in the prospect of playing a significant part in the design and development of learning materials.

For most of them, their entry to distance education was not strongly planned, in some cases more a matter of drifting into the role, rather than making a firm career choice. Each was part of a larger open educational system, within which they found themselves drawn to a particular island of order. It was there that they wished to apply their educational skills and experience.

Having found them selves in a job involving the design and development of distance education materials, how did they perceive their role and status within their institutions?
Status and role

The two linked issues of status and role arose in a number of ways and on a number of occasions during interviews and in the notes and diary quotes that were provided. Nick Little touched on the apparent confusion within institutions on this issue when he wrote, concerning other instructional designers he knew:

Nick They ... appear to have difficulty with the balance between power and responsibility, and/or they are considered ‘support staff’, with limited academic status, and/or are editors. (Written communication – 14/10/93)

That the role of an instructional designer is not well understood, even within distance education circles, is well illustrated by an incident mentioned by Marilyn Wu.

Marilyn I once joined a workshop, and one of my [distance education] colleagues suddenly asked me the question ‘Can you tell me—what does an ID do?’ She has already been here for 10 years, I think. She is in production, the head of that section. So they have no idea what an ID does. (Interview transcript – 31/1/92)

It is also true, as previously discussed, that the term ‘instructional designer’ is by no means used universally for those designing and developing distance education courses. On occasions, I asked the participants about their attitude to the term. Wendy Tsui (see Appendix 2, p. 217) made the following observations.

Wendy I have no particular objection to the title itself, and I think that in a way the title describes the major role of this kind of personnel. But in my experience working as an instructional designer, I do see that in the process, the interaction with the author, we are really actually doing some staff development work. ... I do not like to use the word teach, but actually, in a way I am telling the author some knowledge in education, in instructional design. And I’m sure that the author will be learning through the process.

David People have used the term educational developer. Do you like that term?

Wendy That is a much broader term. So if we use that kind of name, we may then expect the person to do something else other than doing the kind of work that we are doing now. I don’t think that I can make a decision on which one I prefer, but I think the title of educational developer carries a broader meaning. (Interview transcript – 15/11/91)
Concerning her role, at one stage I asked Jane Hammersby about her perception of her overall contribution, and whether instructional designers should be spending more time ‘designing’, at the front end of the development of distance education materials. In her case, it would mean passing on more work to the editors, a position with which she felt uncomfortable.

Jane  I have a feeling that that’s more what I should be doing in a way, but it ... I don’t think it would work. I think it may be something that has been practised by other instructional designers here, but I know that causes—from what I’ve overheard from editors—I think that they don’t like that. They sometimes feel that the instructional designer is making them do all the legwork and running around and sorting out problems, while the instructional designer goes off and does something else. But I am probably doing myself down, because I tend to do slightly more detailed work. In other words I probably make myself less available for lucrative money earning schemes because I will spend more time on things. ... I don’t know, I suppose it depends on what you want to get out as the end result.

David  If you want pride in the course materials, you’ve got to spend a bit of time on it—if your name’s going to be on it, for example?

Jane  I don’t know if I ever actually stop and think about it. It’s something that worries me, that I sometimes feel as if two people are doing the same work. Of course what you’re going to get out at the end of it is something that’s a lot better, but I do wonder whether I sometimes spend too much time going through things. (Interview transcript – 28/2/92)

Concerns for the quality of detail of the course materials were thus taking prominence in Jane’s work, perhaps at the expense of more global issues and general design and development progress. Nevertheless, there were occasions when Jane felt that she was able to make a positive contribution professionally to the growth of her academic colleagues, as was exemplified by an email message I received some time after the interviews.

A note on ID roles. I have just (today) had a discussion with a psychologist who works in the nursing school. She is currently conducting some workshops for nursing staff on communication. She asked me about one staff member who is currently working with me in writing up a new nursing degree unit (and who is having considerable difficulty in getting going). Together we pieced together the underlying problem, which seems to be the lack of status that the lecturer is experiencing within the school—and hence lack of confidence in planning a unit. We decided on a strategy which I could follow which might help the lecturer gain some confidence in writing. Is this staff development or what?? (Email message – 19/4/93)
Marilyn Wu clearly perceived her role as a consultant to her ‘client’ authors. Her knowledge and experience provided her with the necessary skills to provide advice that may or may not be taken. Her advice must be balanced by their professional opinion and knowledge of the material and the learners.

As an instructional designer, I perceive that we need to have a knowledge base that allows us to guide our clients to make informed decisions.

... Most authors I have worked with acknowledge ID inputs. Of course, authors do have their philosophies and ideas, and we can’t expect them to follow entirely what we like them to do.

After the unit blueprint is endorsed, the author will start writing the modules. Normally I like to discuss writing style and tone, use of reading, etc., with authors. But I find that I can’t, as most academic staff go straight to writing before any meetings are held. During the third meeting, very often you will have the sample module (mind you, the second and third meeting could have two months interval). At this point you really can’t contribute anything except review and critique the draft. My normal practice is to review the materials and then put down my suggestions on paper. If I feel that some reference materials would be of help to them I will also incorporate them into my suggestions. An example is the ‘objectives examples’. Many authors find it difficult to think of action verbs for the objectives. A list of examples with action verbs will help them to write, in particular higher level objectives. However, this is very surface work—whether the content and instructional strategies match with the objectives will be another issue.

To this point, I always feel that IDs are very often staff developers. We cannot change our authors in a short span of time, we just sow seeds and hopefully they will grow and mature. (Letter – 7/8/92)

Like Jane, Marilyn found satisfaction in development work that helped her academic colleagues increase their skills in the preparation of materials. The ‘surface level’ work was necessary, but not as important or significant as long term professional growth.

Nick Little perceived his role as something of the ‘attractor’ within the project, the person round whom the process revolved, and who kept the process moving. His clear reference to himself as the ‘engine room’ and ‘focus’ was a matter of some importance, not just for himself personally, but for the order he brought to the chaos of the development process (his time-dependent ‘jigsaw’). Matters of power were also of great concern to him, along with his status within the institution.
Nick ... as far as I’m concerned the role of the instructional designer was far more than that. I was being an administrator as well. I was the engine room of this happening—without me being the focus, it would never have happened. (David Project leader?) Project leader, although the principal used to call me an editor, which was a big bone of contention. Anyway, the short of it was, and I want to stress that in this role it was like a jigsaw, you had to piece the pieces together, but you had to do the jigsaw over time. ...

I’m also a believer that ... you can’t have power without responsibility, and you shouldn’t have responsibility without power. Now the point of it was that I was given responsibility for developing the project, and I did have power within my parameters, that’s fine and I did, and that was freelance, and I believe that I did it satisfactorily. However, when people pull rank and say you will do this or you will not do that, without discussion, then you don’t have any control, and when you don’t have any control you don’t have power, therefore you shouldn’t take responsibility.

... I couldn’t be classified as an academic because I didn’t teach, even though I was and am an academic .... (Interview transcript – 3/3/93)

The vexed issue of the precise nature of the role of an instructional designer was acknowledged by Nick. His defence seemed to be that the job was so complex that it defied easy explanation, especially in comparison with the role of lecturer.

Nick I think it’s very difficult for some instructional designers to know what their role is. I think it’s a hard accusation on instructional designers, because if you ask what they do, they do lots of things. Ask what does a lecturer do, they lecture. That’s easy. What do you lecture in? Soils, plant growth and the environment; that’s easy, everybody knows that. But to say what does an instructional designer do and answer that, gee, I think that’s difficult. But there’s also been some pigheadedness from some in management positions who have refused to understand.

As well as role, Nick was also interested in the attributes of an instructional designer, postulating that imagination and vision ranked highly. His notions sit squarely with the idea of the designer as a strange attractor, a focus that gives the project direction, but with flexibility within boundaries.

Nick I think they’ve got to visualise what the materials will look like at the end. I think they’ve got to be able to visualise the learning experiences that the students might be going through, what sort of constraints they might be suffering. I think they’ve got to have a vision of students sitting down and saying this is good, this is bad, I’m tired, I can’t cope, all of those.

David Empathy?
Nick More than empathy. Empathy means that you appreciate it; a vision means that start to do something about it. There’s a goal there that you’ll try and ... I mean some of the literature talks about emancipation. It’s a little bit like emancipating some of these people, not from their socio-economic status, but from their environment so that they can study. But then again, study is not in isolation from their environment. That’s another thing that I’ve been talking about—why should they study in isolation, why can’t they study and then go and talk to their family about the topic, and get feedback? I’m sure some materials already do. There’s lots of areas still to experiment. (Interview transcript – 3/3/93)

Nick was thus a person bubbling with opinion and ideas of what instructional design was, and what it might be when we find out more about how people learn. He was also keen to have a word on the status issue, perhaps reflecting some of the frustration he’d experienced establishing his credibility as an instructional designer within his institution.

Nick But yes, there is a status thing, I find it amusing that when the so-called academics look down on instructional designers. Many of them are better trained as educationists in their own right. (Interview transcript – 3/3/93)

Felicity Simmons expressed opinion on the role and status issue by relating it to the amount of work done by the contributors to a development project.

Felicity I think, actually, the educational developer should work with the unit chair and should be at the same status, in the sense that these two people who actually do most of the work and the team are there to come to meetings and maybe they write in parts as well. But it’s the unit chair and the educational developer who do most of the work load.

As far as her personal development into her role was concerned, she made the following comments about her attempts to get to grips with the job.

Felicity When I knew that I got the job here, I went to a good bookshop in Britain and got all the recent stuff on teaching and learning ... . But in terms of developing my understanding of what educational development might be. It has been interesting ... the critical theory has been interesting, and I’ve been looking at phenomenology and what that might mean ... I suppose I’m in a fairly academic environment here, I’ve been able to talk to people and find that useful. And would like to work in that kind of environment in the future.

Like others, Felicity found it difficult to articulate clearly the role of an instructional designer or educational developer. The role would vary,
depending on the person and the circumstances. Academic versus non-academic concerns also crept into the discussion, with fears of a non-academic ‘production line’ not to Felicity’s liking. Her description of the freedom and flexibility she envisages can be perceived as her desire to bring order to a complex process through a matching of skills and experience, rather than the imposition of a tightly prescriptive system.

_Felicity_ It is very difficult to know or to make any generalisations about what an educational developer does, partly because we all work in different sorts of ways. I work, for example, in areas where materials aren’t going through [the] production [section], and they are pilot courses which are going straight out through me. Which is a very different kettle of fish from other educational developers, who may work with courses that are going through production, and their job therefore changes quite a lot or could be seen to be different. I think if we all go and work in a production unit which is headed by a non-academic who is used to a production system which is already in place, then the likelihood is that we would all get slotted into a production process. We will become part of the big chart with its coloured splodges and we get moved along with allocated colours. I think that that will be very limiting, and I know from what the editors say about their problems with the job is that they get texts dumped on their desk—they don’t know where they come from. They don’t have any choice in what they work on. It is just put on their desk and they have to work through it.

Now if you can’t actually allocate educational developers with preferences or in terms of areas that they are used to working—if for example someone is used to working in humanities or in nursing or whatever, it is useful to get someone who is a little bit experienced as an educational developer in that specific area. I think that those matching of skills does count. You need also to be working with people you can work with as an educational developer, and if those sorts of things disappear then it will be politic in terms of using us as a resource. Also I mentioned my problem in thinking that the head of the educational developers as a group might be a non-academic—we will be less in contact with what is happening in distance education as a academic area of study. (_Interview transcript – 15/12/92_)

Felicity here reflected the machinations to which her institution was being subjected, with changes being put in place with respect to course development procedures, organisational structure and lines of responsibility. She had obvious fears concerning a system which she perceived might rob her of some of the freedom she had within the current system.

Marilyn Wu reflected on status in terms of the changing culture she had experienced in moving from Hong Kong to Australia. In making the move she had changed from Senior Lecturer to Lecturer, and this now seemed to impinge
on her status and her ability to interact with the lecturing staff with whom she worked developing distance education materials.

*Marilyn*  
Settling in. There’s a lot of things you can talk about. One is the organisational culture is very different. The management style of your supervisor, your head, is very different. The orientation and the focus, I suppose it’s the ethos, of the organisation is also different. The workload, which affects our degree and the level of involvement—ID input—operational procedures, opportunities for staff development, responsibility and accountability, your status, whether I could import my experience or whether I could learn from this institution, ...

*David*  
When you say status, what do you mean there?

*Marilyn*  
Well, it’s a very different status here. I think in the [Hong Kong institution], because almost all of us are at senior lecturer level, so ... you are talking more on the same level as, say, a unit team leader who is a dean or associate dean or who is the senior lecturer in academic schools. But as a lecturer, you think that you are not talking on the same level. While for our job nature, I think we need to be talking on the same level, because we are critiquing their product.

Marilyn and I had a shared background in Hong Kong, and we discussed the status held by instructional designers in Hong Kong, making comparisons with her present institution. Most of the Hong Kong appointments were at SL level, while in her present department there was only one staff member at that level. Qualifications were also perceived as an issue.

*Marilyn*  
Yes, and also I think for [the Hong Kong institution], mainly you need a postgraduate qualification for [an instructional designer] position, while for here, although they say that you need a Masters degree, in actual practice that is not true. We have some instructional designers without Masters degrees yet.

*David*  
Right. So status is a problem in your institution at the moment.

*Marilyn*  
Especially when you have Education Officers, some of whom already have a Masters degree. ... it creates a lot of conflict. And EOs are advised not to apply for ID positions.

This, along with Marilyn’s observations and examples of people in her institution showing misunderstanding of staff with respect to their status and role, prompted a rather leading question as to whether she was trying to change the system.

*Marilyn*  
Yes, yes. It’s always easier to change other people than it is to change yourself! So sometimes I really feel that I need an editor. I mean the EOs should be doing editorial work. I think that the [previous
Hong Kong system is very clear cut. Although there are still some blurred areas in which editors and IDs overlap, but not as much as we are doing here. (*Interview transcript – 28/2/92*)

Marilyn thus struggled somewhat in her new institution for the status she had enjoyed in her previous appointment. It was not just a concern for herself, though, as she perceived weaknesses in the system that affected all her colleagues. As with the others, she believed that the instructional designer should be working as an equal colleague with others involved in the development of the materials.

**Conclusion**

For most of the instructional designers, then, status was a matter of concern. To make an impact and be successful in their role, the perception was that they should be of equal status with the academic staff with whom they worked. Though acknowledging that the nature of their role was often not understood or appreciated, they were generally clear concerning the nature of their work. To at least some extent, each perceived that they played a pivotal, or ‘attractor’, role in ensuring the quality of the learning materials, with most claiming that staff development was associated with their job.
Chapter 6

Issues: Attractors and their Effects

By virtue of subjectivity, I tell the story I am moved to tell. Reserve my subjectivity and I do not become a value-free participant observer, merely an empty headed one...

Peshkin, 1985, p. 280

Introduction

This chapter examines issues that emerged from the case studies. Particular focus is given to issues that were common to all participants, ‘time’ being a key example. The other principal issue addressed in this chapter is the giving of advice by instructional designers to those with whom they work developing distance education courses. However, important sub-issues also arose which will be considered, such as the ways in which projects get started, and the concerns expressed by those working in a second language. As mentioned in the introduction to Chapter 5 (see p. 92), the extracts from the interviews with the participants are quite extensive, to preserve their contextual nature.

The sequencing of the issues explored here follows a logical path, in that it begins with consideration of the variety of ways in which the participants commenced their work with the exemplar projects. In chaos terms, ‘getting started’ outlines the formation of attractors within the open systems of course development. This is followed by discussion of the pervading issue of time and its effects on the system, the people involved and the progress of the projects. Next, the instructional designers describe their work in terms of the nature and effect of the advice that they provided others in developing course materials—the attractor at work. Finally, this chapter explores two issues which illustrate the nature of the systems in which instructional designers work.
Getting started: becoming an attractor

This issue outlines the manner and circumstances in which the participants began their involvement with the projects they describe. I was keen to discover the stage at which they entered the development process, and what they did at that stage to facilitate the work. As it transpired, there was great variety in the way that each project started, or at least how and when the instructional designer’s input to the development process began.

The three local Hong Kong participants were all working in a tertiary institution which had a minor commitment to distance education. Although involvement in distance education was quite recent at that time, there had been an on-going programme of development of self-instructional materials for part-time evening students for about seven years. There was thus a reasonable well-established system of development, along with production resources. The particular programme with which they were involved was a pre-primary education certificate course, presented in Chinese, and each chose a subject from that course as their example for me to follow through. One of the three, Wendy Tsui, had a long association with the course, having been on the committee which put together the curriculum documents. It was KC Leung, though, who I interviewed first and outlined his initial participation in the course.

KC Yes, we met about a year ago, perhaps less than a year ago, about November last year. All these people except [the editor] were present, and we had a general meeting to discuss the approaches and deadlines and all these things.

David Was the curriculum, the syllabus for the course already established at this time?

KC Yes, there existed already this validation document—everything had been validated. But then of course afterwards a lot of things have been changed.

David So it was originally the [academic department] who developed the course document?

KC Well, [instructional designers] before my time also contributed. Wendy said she practically wrote one of the chapters for validation.

David And then when it came to your actual subject, the course content has changed a bit?
All along some suggestions were made and then the curriculum was a little bit changed from time to time—some parts were crossed out and new things added.

There was thus in place what might be considered a fairly standard process for the development of distance education materials. A team, consisting of departmental academics who would write/review the materials with the assistance of an instructional designer, was put in place to take the curriculum documents and use them as a basis for the project. This basis was, however, not ‘cast in stone’, as is intimated above. It was more an evolutionary process, with changes suggested and accepted as the course design and development progressed. In this sense the development was not simply linear, but was allowed to have elements of variation—an open system responding to forces of change in a positive sense.

A name then entered the interview discussion which was destined re-occur, both with KC and later with Wendy. This was Mrs Wong, apparently a quite formidable course leader for the programme. I had asked how flexibly the curriculum had been interpreted by the course development team.

Quite flexible, yes. Mrs Wong, the course organiser, had all the say, actually. She was the one.

She was the one with the suggestions, or she agreed with the changes?

Most of the time she brought up the changes.

And the others agreed.

Yes, but as far as I know, not drastically changed. The whole thing still remains what it was—practically, that is. (Interview transcript – 25/10/90)

Next to be interviewed with respect to the course was YL Cheung, who like KC had not been associated with the earlier initial development of the course. The syllabus to which he was supposed to work had been through a chequered development. I asked him about the origins of the syllabus, and who was involved.

It has a long history—long before I came here. I heard, I don’t know whether it’s true, that when the subject was first proposed in the course team, the subject syllabus was prepared by someone else in the ... Department. And then the [instructional designer] in charge at that time had a strong negative feeling towards the subject syllabus ...
was teaching sociology, rather than helping the students to acquire a sociological perspective when looking at pre-primary education. This is the main difference, and I heard that there was heated debate. Finally, the decision was that the author was not going to write it.

The early conflict that existed in the course development thus led to quite radical outcomes. In chaos terms, what appeared to happen was that the system became turbulent, as the course team entered a phase of potentially creative debate over course aims and content. As the turbulence grew, the system moved to a point of bifurcation, with a range of possible outcomes, some more productive than others. In this case, the new order that emerged saw a completely new thrust in the curricular aims, and a change in authors of the course materials. Further, this resulted in pressure on the preparation of the units in terms of time (an issue to be pursued later), and so I asked about whether this pressure had a significant effect on the process.

YL. Yes, in the sense that a more ideal situation is that the author and [instructional designer] could have more time to think about the aims and objectives of the course before actually starting writing. At present we don’t have that luxury. We change our mind as we drift on, because we are actually using the syllabus that was drafted long before the author accepted the authorship and I took over the instructional design role. We are writing up somebody else’s syllabus.

As I had previously done with KC, I queried YL as to the degree of flexibility with which the curriculum documents were interpreted.

YL. I think the original curriculum proposed by the course committee was more sociological in background. Judging from what is written there, the main emphasis is on sociology, academic sociology, teaching students some elementary sociology. ... I think the author and I both agree that we are not going to teach sociology. We are trying to help students to acquire a kind of perspective in looking at their own job in Kindergartens. But then we don’t have time to think it over very carefully, what we are going to include in each topic, so we have to stick back to the original design. We work out what we want to include when we actually write it up. In that sense, we don’t have sufficient time to think over the syllabus before we start writing. But in terms of actual progress ... I heard that our subject is the only subject that has stuck to schedule! (Interview transcript – 26/2/91)

Thus, by mutual agreement, YL and the author trusted their professional instincts to change the emphasis of the syllabus to one that they believed more accurately met the perceived needs of the students. However, time and other constraints meant that they had to tread a fine line, giving the materials the
‘spirit’ they believed in, while at the same time keeping to enough of the ‘letter’ of the syllabus to satisfy other parties associated with the course.

Finally, Wendy, with the longest contact with the course, outlined the beginnings of the particular subject that was her exemplar project. It was not the first subject with which she had been involved in the education course.

Wendy Last year, when this particular subject was supposed to be developed, the author was so tied up with other things, so she could not finish the first draft in time to give the [instructional designer] and editors enough time to work on. And so the decision was that she would just print the first drafts for the students to use last year.

She wrote the first draft on her own—it was not read by anyone in [Wendy’s department]. It went out to the students unit by unit [each section was posted as soon as it was ready]. So the first development work didn’t start until this year.

An extra complication with this particular subject was next revealed, as it transpired that the development had started with KC Leung, but had more recently been handed over to Wendy. Her tactful explanation of the change of instructional designers probably masked a difficult situation, one not pursued in the interview.

Wendy About the [instructional designer] IC [in charge]. This subject was originally under KC Leung. But after the author had drafted the first drafts and given it to him—he started reading the first unit in May this year—he found that it was not particularly his taste, so that he would prefer to do something else. After talking to [the head of section], this was passed to me. So I started working on this in fact only in May this year.

David You have worked, though, on other subjects in the course, and worked with Mrs Wong before.

Wendy Yes, yes. I was the [instructional designer] IC for the two subjects offered in the first year, which were both written by Mrs Wong. So I have been working with Mrs Wong for a long time, starting from the very beginning when the course was only in the planning stage. I joined the team at that early stage. We developed together the syllabus, the course scheme, etc. So, in a sense, I and Mrs Wong worked together for a long time, and we know each other very well. Our working styles, what we are strong at and weak at, we know each other very well.

The implication thus being that Wendy was involved early in course planning, I asked for confirmation of whether this was a preferred state of affairs.
Yes. I think that in terms of contribution to the course, I think that it is much better, because then we can see from the very first stage and from the very first step of analysing the students needs, and building on these needs the structure of the course and the elements of the course, giving advice in all these aspects. But of course, not all our advice is taken ... (Interview transcript – 16/7/91)

This section of interview thus ends with the tantalising promise of a further issue, that of the giving and taking of advice, which will be pursued in the next section.

Felicity Simmons was working at an established dual mode institution in Australia, with a long history of commitment to distance education. Felicity’s start was necessarily somewhat late in the project she used as an exemplar, as she explained. In a sense, she was acting as a transformer of others’ material, to bring it to the required standards of an outside body.

This is a project with [a medical foundation] who approached the institute here in [the university] to ask if we could help on a project to develop a resource kit which had been funded federally and they were running out of time to complete the resource kit. They had already started off with writers writing from different parts of Australia, and they’d also had an educational developer working from another university (at least I think) on the project but hadn’t been satisfied with the outcome. Again we have an example of a project which entered a turbulent phase, and the process of bifurcation led to the radical new order of the project being moved from its original institution to that where Felicity worked. Interestingly, it was the issue of time, as well as dissatisfaction with the materials, that had brought the previously-contracted developers undone, as Felicity further explained. Time, or the claimed lack of it, is an issue to which we will return in greater detail later.

From what I gather the Federal Government was pushing them for the result, and they had used up all of the money ... I think the project had been going on for about two or three years and it was taking a lot longer than they had anticipated. I don’t think that they understood how difficult it is to get writers to write and to actually get thing put together at the end of the day. What they had done, already as a rescue operation, was they had got somebody who was I thought then at that time working for the [medical foundation] as a specialist nurse educator in [the medical condition]. She was pulling together the materials from the different writers and she had decided to actually turn the resource kit into a book because, I think, of the time limits. The time constraints didn’t allow her to do anything else and all they got was a text base—material and chapters written by different authors. So
she had rewritten large sections of the text and put it altogether in a book and at that point the [medical foundation] asked [the university] if we could help them by doing some final work on the text and put it through our production. (*Interview transcript – 16/9/92*)

Thus, with this project, the problem of time constraints arose early and strongly, and will be seen to be a major influencing factor in virtually all the exemplar projects investigated here.

Nick Little was involved in a quite large project, the introduction of a new horticulture course, the first programme offered at a distance by his institution. Envisaging that he would eventually be working with a number of the lecturing staff, his first action was to identify potential participants and conduct a workshop, as he explained.

*Nick* Having identified those people, I then ran a workshop for all those prospective authors, in the November of the year, saying this is what the project is all about, this is what the expectations from your side and my side are, this is how you go about it, this is how we’re going to work.

*David* What sort of things would you have told them?

*Nick* The length of the unit, the help that we can give here, don’t panic, just get it down on paper, I’ll help you sort it out, ...

As discussed in Chapter 5, Nick perceived his role to be the ‘focus’, the ‘engine room’ or, in the parlance of this thesis, the attractor of the project. Within this framework, Nick saw that the path to order in the development process lay in his ability to make sense of whatever the person was able to articulate in print. The text would be his key to unravelling the intricacies and problems of producing a particular subject as a set of distance education materials. Later in the interview, I came back to the issue of how he got a particular lecturer started in the development process, how it was that she began her course writing task.

*Nick* The first bit—I think I asked her to present something after a yarn—she and I had a yarn. And I said, how about you come up with, I think I said about fifteen pages. Sit down and write up ten or fifteen pages.

... I wanted to see what she could produce. I was really giving her a bit of free rein, given that I had given her some parameters at first. This is not the workshop, this is somewhere down the track. I’d given her some parameters such as activities, diagrams and so on. She didn’t actually have to draw them or anything like that, just give us a look at the approach—I wanted to see her approach. ... when she presented the
stuff, ... quite frankly it was slammed. Not because it wasn’t good enough, but because it wasn’t the right approach. Academically it was fine, but it wasn’t soft enough, it wasn’t user friendly enough. It wasn’t coming in at the right level that we thought was appropriate.

David You agreed with them?

Nick Oh yes, I was in agreement. ... And that was given back to Carole—Carole was invited to [the course development team] meetings. It was agreed that authors would be invited to meetings where their material was being discussed. So they were actually in discussions at the time that their material was being looked at. But for other issues they would be invited to leave or they weren’t required, depending on the sensitivity. And that was not considered an issue in most cases. Carole was invited, and she actually told me later that she was quite upset, that we very gently said that we didn’t like it. But she in retrospect herself has said that it was the best thing that ever happened, because she then changed her approach and off she went.

The next presentation, she and I started to work far more intimately at a professional level, and we managed to come up with the first chapter. (Interview transcript – 3/3/93)

Like Wendy, Steve Worboys (see Appendix 2, p. 224) had been involved early in his project. It was part of a revamped degree program, whereby the separate and different courses offered at three campuses of a newly amalgamated university were rationalised. Distance education was to be the vehicle by which the rationalisation would be achieved. The same learning materials would be given to students, both on campus and off campus, at each of the campuses. After having assisted with the proceedings that saw the new course structure emerge, Steve was appointed to act as instructional designer (or, in his university’s parlance, educational developer) for the development of new course materials. When asked how the team for the new subject, dealing with the theory of organisations, got together and began development, Steve explained his role as follows:

Steve Well, I’d sort of initiated it because nothing was happening. So I contacted the unit Chair to get the ball rolling, and so from that he then contacted all the people who are on the team. I let him know about the units in existence down here. I organised copies of that unit to be sent to all members of the unit team. So at the first meeting they’d all had that sent to them, and they had all thought about being given the task to think about textbooks—that what texts were around that might suit.

Whether it was expected or not, Steve thus took it upon himself to start moving the group towards the order that would be needed to achieve the programme aims. Like Nick, he became the person around whom the work began to
revolve. Steve had been associated with a similar subject that was run from his campus, leading to his attempt to help team members by supplying copies of that material. As the interview progressed, my erroneous assumptions about what was being created in developing the subject were quickly revealed. My naïve belief was that the team was working with a prepared syllabus, about which I proceeded to ask.

*Steve* No, no. No, there was no pre-planned curriculum or syllabus for this unit.

*David* But, wouldn’t they have been teaching it face to face? I’m a little confused.

*Steve* Well, I was a little confused too when it ... No, none of them have been teaching organisational theory. See, I was only familiar with the ... I didn’t even delve into the [other campus] business degree, you know I’m not familiar with it at all. The only previous program I was familiar with was the one [on Steve’s campus] where we had the organisational theory unit. But no, none of the people on the unit team have taught an organisational theory unit before.

*David* But that’s subject to ... this is interesting! But that subject is being taught face to face at [the other campus]? It must be, mustn’t it, as part of the [business degree]? One assumes!

*Steve* ... it’s only the first year units that are being taught this year, so not necessarily. See, the first year, 1994, the first year units are being taught. This unit within the [business degree] setting doesn’t get taught until next year.

*David* Oh, I see. So, there aren’t new students doing this subject, because it’s not a first semester ... it’s not a first year first semester subject?

*Steve* I must admit, I didn’t ask that specific question ... I was just bowled over by the fact that here we had a unit team, none of whom had taught this. I mean, a most open-ended beginning to a unit I have ever been party to.

Given this very ‘open’ situation, the stage seemed to be set for what could easily lead to radically different outcomes, either a complete disaster or a high quality learning environment. It was thus of great interest how Steve and the team would handle the seemingly chaotic situation in order to produce the best outcome.

Having been incorrect in my assumptions already, I became more circumspect in my questioning, first asking about the distance education experience of the other team members.
Steve [The person chairing the group] from [the main campus] has been involved and some of the others had a little bit of disastrous interaction with [a training centre] running out of [the other campus]—or unhappy shall I say.

David Had they been volunteers or had they been dragooned?

Steve No, they weren’t, they were all allocated to it, but I think it was they were allocated with a fairly focussed sense of who might work together and who could do the job. So it was by no means arbitrary by the Head of School ... I don’t know the degree of consultation that went on with people, but there only ended up being one person who was openly reluctant to be a team member.

David Because of the previous bad experience or just had enough to do and didn’t want more work?

Steve I think because of, or I know because of previous bad experience with the [training centre], and also saying that too much else to do and the fact that he had been put on other teams as well. The interesting part was like the first time I went along to this meeting, it was very ... when I worked here before, you were always working in a familiar environment where I know the people, and here I was walking in cold in a social sense if you like and this chap who didn’t want to be there let me know in no uncertain terms that he didn’t want to be there. It was very forceful, sort of aggressive ....

David Why do you think he felt the need to tell you?

Steve Because, I suppose, he might have had a sense of having imposed on them this outside expert who’s going to be telling them what to do.

David Yes, I suppose that was my question. What do you think was their perception of you? Obviously that’s part of it.

Steve They had no perception of me at all at the beginning other than this, I think—well I don’t know, certainly from this guy there was the perception that I was the enemy. Which was rather a challenge to cope with, because it was so different from my working environment in the past here ... , where you know everybody and everyone has at least a sense of what your role is, and whereas they didn’t. But others in the group were much more accepting in terms that they were friendly, but certainly had no sense of what my role was. So I really had to start from scratch.

As far as the development process was concerned, Steve was thus a point of focus for the group, who were interested to see what sort of direction or guidance he might offer. He could thus be perceived as an attractor, around which the complex functioning group was formed.
The above comments provided an opening for me to probe about Steve’s approach to the newly-formed team, and I asked him to explain what he did at that first meeting. As he moved on to explain the nature of his role, I perhaps unwisely gave him a leading comment as he tried to build a metaphor to explain his actions.

*Steve* I didn’t have any prepared notes ... I was more or less given the floor straight away, which I was happy about because I thought it was immediately apparent that for the dynamics of the group that I establish who I was and why I was there. Because it was obvious why the others were there; they were all teaching academics, and so I guess I explained it in terms of being a multidimensional ... I was there, as a ... I can’t remember the expression, but it was along the lines of being the educated ignoramus—the instructional designer, the educational developer as ...

*David* A de facto student?

*Steve* Yes, in a sense, but coming at it with all the background knowledge of the environment that goes into the preparation and production of the materials. So I spent a fair bit of time on that first session just outlining to them the procedures that we would be going to use, the due date that we were working to, why these due dates were being set, where the unit was being taught, who the students were likely to be, the range of students that this unit was going to be offered to, how it was going to be offered through three campuses, plus off campus students, how this was all very new to everybody and this was as a complete description of the environment, and they had very little idea of it. So it was scene-setting—a lot of scene-setting went on in that. *(Interview transcript – 4/5/94)*

Steve was thus put in a challenging situation, but appeared to have had the experience and confidence to brief the team and adapt his usual way of working to a new circumstance. Elements of how he perceived order would be found from their deliberations is evident in the considerations he put to the members of the team. As he mentioned, he was initially giving attention to the ‘dynamics of the group’, trying to ensure that it would, over time, produce an ordered, creative outcome. Aspects of how he coped with the subsequent course team meetings will be revealed in later deliberations on other issues.

Marilyn Wu provided some interesting speculation on her attitude to beginning course development projects, especially with respect to the differing types of people with whom she worked. Having given it some thought following questioning in an earlier interview she offered the following notions.
Yes, now about working with different authors, yes. I was trying to figure out something this afternoon. If you have a piece of paper and pencil, will you draw something? (David: Yes.) I have actually in mind three categories or criteria classifying authors. One is teaching experience, the second is working experience and the third is their experience working with IDs. So you have three dimensions. ... Teaching experience, writing experience and experience of working with IDs. For each dimension you have two categories, experienced and inexperienced; then you have two times two times two variables, so you have eight groups of authors. But probably of the eight, inexperienced teaching will also take out some of the categories, because most of them will have experience in teaching. So I ended up with, instead of eight categories of authors, I ended up with only four. The first one is inexperienced in teaching, inexperienced in writing, inexperienced with working with instructional designers.

David Right, so that’s the real novice.

And then the other three categories are all experienced at teaching. The first group, the second group now, is the experienced teacher, experienced in writing and experienced with working with instructional designers. The third group is experienced in teaching, experienced in writing, but inexperienced in working with instructional designers. The fourth group is experienced in teaching, inexperienced in writing and inexperienced in working with instructional designers.

At this stage, during our telephone interview, I had produced a rough version of the following table. Marilyn went on to explain the implications of the categories for the ways she would work with different people.

<table>
<thead>
<tr>
<th>1 Inexperienced in teaching, writing and working with IDs</th>
<th>2 Experienced in teaching, writing, and working with IDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Experienced in teaching and writing, but inexperienced in working with IDs</td>
<td>4 Experienced in teaching, but inexperienced in writing and working with IDs</td>
</tr>
</tbody>
</table>

Marilyn And I think if you ask me what sort of authors you think that ID input could be most extensive for, highest level, and I would say that all inexperienced—‘no ex’. So the extent, the level, the scope, the nature is all different. I mean they’re all different in these four categories of authors.

Marilyn claimed to have worked with people in all four categories, so I asked her to comment on how her approach would vary.

Marilyn ... the ‘no ex’ one—normally you will be able to convince them that writing for distance learners and preparing distance learning materials is completely a different ballgame than teaching on campus. Then they are quite open and they are quite willing to accept your ideas. Just like when you work with rural doctors, to cite an example.
The rural doctors training program which we worked with, they are all inexperienced in teaching, in writing and in working with IDs. They tend to be very accepting of your ideas and they depend on you very much. So in that case you provide a lot of guidance, and the sense of achievement comes mainly from that group of people.

Marilyn continued to speak with enthusiasm of her work with inexperienced people as follows.

_Marilyn_ ... because of their inexperience in teaching, they sometimes could be scared or feel that they’re not competent in teaching.

_David_ So that’s the group you enjoy working with the most?

_Marilyn_ Yes, sure. It’s like a white piece of paper that you can start writing anything on it!

Given that her preference was for working with others inexperienced in distance education, I was interested to ascertain Marilyn’s attitude and approach with experienced academic colleagues. I asked her what factors were important in working with the experienced group.

_Marilyn_ That group, I’ve put a question mark there. ... It depends very much on their past experience. If they have experience in working with IDs, sometimes if they’ve come across an ID who could not contribute very much, then they will say that ID is rubbish ... . So that is the most difficult group of people—you have to break into their territory. But again it’s a very personal thing, and I think that the fact that I came from Hong Kong into this institution has given me some credit. And I find that for some ‘three ex’ people, I don’t have much problem working with them. And in fact they are quite willing to see what I can contribute as compared to what they had experienced.

_David_ Because you’re new and have come in with new ideas?

_Marilyn_ Yes, I think that for me it’s an asset, and I think that also because of this I am very different from the experience that they have gone through. I did manage to develop a good reputation on campus. ... So I put a question mark there. And the second category which I feel that IDs could contribute quite a lot of input is the ‘ex-in-in’ one. That is, experienced in teaching, inexperienced in writing and inexperienced in instructional design. That is another group that I feel that sometimes they are feeling very insecure, especially if they have gone through a learning system which is mainly on-campus. And now they have to teach off-campus. They will be quite willing to know more about teaching off-campus. (Interview transcript – 31/1/92)

Thus Marilyn was quite positive about the work she was able to accomplish with others, across a wide range of backgrounds. Her different experience and
ideas were a positive contribution, giving others an increased sense of creativity and increasing the range of options open to them. She reduced their insecurity through her competence, at the same time introducing more uncertainty as the possibilities widened.

‘Getting started’ was thus accomplished in a variety of ways by the participants, as each strove to become an attractor within the structure of course development. There was also a variety of starting points, the moment in the process when the instructional designer began to have an influence.

Wendy Tsui was involved from the beginning, quickly forming what might be seen as a double attractor arrangement with Mrs Wong. KC Leung and YL Cheung, however, entered later, after the course development group had experienced a period of turbulence concerning curriculum issues. Turbulence was also at the centre of Felicity Simmons’s entry to her project, as she began her ‘rescue’ of a project that had foundered while under development by another institution. The chaos within the project required the focus of an attractor to bring the turbulence to a creative outcome.

Almost the opposite was required by Steve Worboys, who had been assigned to a course development group that had made no significant progress. Steve saw his task as one of creating some turbulence in order to unleash the creative forces of the group, to initiate some action, because ‘nothing was happening’. Finally, Nick Little, from the beginning, strongly perceived himself as the attractor or ‘focus’ of the development group. He was involved early in the process, ‘getting started’ by conducting workshops for potential contributors and encouraging a particular writer to begin drafting course materials.

The arrow of time

Chaos and time

Time was earlier identified as a key feature of chaos theory, especially as conceived by Prigogine and Stengers. As far as the instructional designers in the study are concerned, it is this issue which most powerfully supports the argued need for a science of becoming, rather than being, as the following analysis reveals. A problem is, though, that ‘in social science, time remains a largely unmapped terrain’ (Toffler, 1984, p. xviii), and even in science, the irreversible
aspects of time have been successfully tackled only in this century. Prigogine and Stengers (1984, p. 310) have begun to articulate an explanation of the role of time within chaos theory, making connections with the earlier work of Einstein, Whitehead and Heidegger. What is important in their argument is the belief that:

... time-dependent, one-way processes are not merely aberrations or deviations from a world in which time is irreversible. If anything, the opposite might be true, and it is reversible time, associated with ‘closed systems’ (if such, indeed, exist in reality), that may well be the rare or aberrant phenomenon. What is more, irreversible processes are the sources of order ... It is the processes associated with randomness, openness, that lead to higher levels of organization, such as dissipative structures. (Toffler, 1984, p. xxi)

To summarise earlier discussion in Chapter 2, traditional Newtonian physics is a system which allows for reversibility. The cycles of the universe follow predictable rules and paths which can in theory flow equally well backwards or forwards with respect to time. The proclamation of the Second Law of Thermodynamics, involving entropy, saw the need for a closer examination of time, due to the loss of energy in the universe, an irreversible process (the unstoppable ‘arrow of time’). This led to further difficulty, as some sciences, especially physics, saw the universe as ‘running down’, while others, such as evolutionary biology, studied the emergence of order, organisation and greater complexity, directly at odds with the physicists.

Prigogine and Stengers have attempted to reconcile these views by claiming that entropy can in a sense work both ways, towards degradation or towards order, depending on the conditions in the system. In a stable system, under equilibrium conditions, entropy will lead the system to degrade, while under nonequilibrium conditions, entropy may lead to greater organisation, the essence of evolution.

Importantly, what we are given is a theory of becoming, in which time is central, and early tools for studying the problems of time in social settings are emerging. In particular, recent applications of chaos theory are being made to a particularly time-focussed area of study, that of history (Abraham, 1994; Lewin, 1993).
From the viewpoint of dynamics, history falls into stages described by special forms of dynamical behavior called attractors and connected by particular kinds of transformations called bifurcations. ... Chaotic attractors display, at once, features of chaos and features of order. They represent systems in states of agitation, as in the case of turbulence. (Abraham, 1994, p. 60)

Like history, instructional design in distance education is time-focussed, as will be established in the following sections. Further connections with turbulence and the role of attractors will also be made.

**Instructional design and time**

The issue of time and all its associated problems loomed large with all participants to some degree, and proved to be a key source of tension between instructional designers and writers. Naturally, this affected both the work of the writers of materials as well as the instructional designers, and had a number of consequences for the courses. The pervasive and irreversible nature of time problems was exemplified by YL Cheung’s observation:

*YL*  
Yes, in the sense that a more ideal situation is that the author and [instructional designer] could have more time to think about the aims and objectives of the course before actually starting writing. At present we don’t have that luxury. *(Interview transcript — 11/4/91)*

**Writers’ time**

With varying degrees of sympathy, all of the participants recognised the time pressures on the writers with whom they worked. When discussing difficulties with schedules, Wendy Tsui commented:

*Wendy*  
It’s because of the time factor—the author is Mrs Wong, a senior lecturer in [the academic department]. She is also the course co-ordinator of the whole project. So she is very heavily loaded, because she herself writes a few subjects from the course. In addition, she has some administrative roles and other teaching loads. So she was very, very loaded.

The problem was common with all the writers in the department with which Wendy was working:

*Wendy*  
It is Mrs Lo. So since we have the same author, we face the same problem, that she is terribly busy. So this subject is supposed to be tried out in this academic year, 91/92, but then in August this year,
not a word was written yet. And she was planning to go on leave for a
month in the summer, and so all the schedules became very tight.
(Interview transcript – 15/11/91)

While recognising the work pressures on staff, KC Leung was somewhat less
sympathetic to the plight of the writers:

KC Well you see, the thing is despite this meeting which took
place almost a year ago, things should have been worked out fine—we
had a lot of time for preparation, but the authors somehow
procrastinated, and didn’t turn in the drafts until the very last moment.

David You had agreed deadlines?

KC Yes, but deadlines were never met. Never. So actually we
are racing against time. (Interview transcript – 25/10/90)

Those on the development team assigned to the role of reviewers were also
suffering from time constraints, as this issue again rose to the fore in the next
interview.

KC All these [academic department] people are literally
burdened with piles and piles of work. She is very busy, and I try to ... I
mean, I call her a number of times to say that she should hurry up with
the reviewing, but so far she hasn’t responded.

David And you haven’t got the time to stop—you’ve got to get
on with producing the materials.

KC Every time I went up there in the past two weeks, I tried to
see whether she was in to try to ask whether she is finished with the
reviewing. She wasn’t there, she was busy teaching or ... 

David She’s not avoiding you?

KC No, I don’t think so. Maybe she is not looking at this
programme, not taking it so seriously, I don’t know. (Interview
transcript – 26/11/90)

Jane Hammersby perceived the time problem as related to differing ‘mindsets’,
as she explained the problems she was having with deadlines, and the writer’s
tendency to make changes after materials had been submitted:

Jane She’s overshot deadlines, and she doesn’t make it easy,
because each time she keeps making these changes. And I keep
explaining to her how the changes can’t be accommodated. Yes, she has
an academic humanities type brain that doesn’t understand technical
restrictions. She’s also one of these people who regards our department
as being an imposition upon her as well, giving her work to do.  
(*Interview transcript – 28/2/92*)

This comment can be assessed in the light of observations made by Toffler in the Foreword to Prigogine and Stengers’ (1984) *Order Out of Chaos*. Therein he addresses their concern with time, and relates it to his own published views. He believes the social sciences need a theory that:

might reach across many disciplines, from politics to group dynamics and interpersonal psychology. It might, for example, take account of what ... I called ‘durational expectancies’ — our culturally induced assumptions about how long certain processes are supposed to take.  
(Toffler, 1984, p. xviii)

Clearly Jane and Nicole had differing conceptions of the time it could and should take to achieve their joint task. It became a particular point of irritation with Jane in her dealing with Nicole, leading to the above expressed view.

**Instructional designers’ time**

The time pressures on writers, along with the overshooting of deadlines, affected the amount of time the instructional designers spent on materials. Another factor, related to time, was the number of projects that an instructional designer was faced with at any one time. Of the participants, Marilyn Wu was involved with the greatest number, and expressed her frustration at the situation. It also reflected the institutional expectations of the amount of time designers were meant to spend working on drafts.

*Marilyn* But you know how many units I’m looking after? (*David* I hate to imagine!) I’m looking after 16 units. (*David* That’s terrible.) Yes, plus all the workshops that I have to run, so it’s absolutely crazy that I’m able to do it. But I think the instructional design work that I’ve put in is more than expected here. [Another instructional designer, the head of department] said he only needs about fifteen minutes to read over one module—complete instructional designer input for one module, ten hours of study time. (*Interview transcript – 28/2/92*)

Personal circumstances can also affect the availability of time, as is illustrated by Jane Hammersby, coming back to work part-time after maternity leave. As she explained,

*Jane* It’s probably going to be slightly more strict than it normally would be, because my time is limited, and because that’s the time that I have fixed for putting [her son] into the child care centre.
Normally, I might not fix a definite date every week, but I think that it’s … well, we spent a lot of time trying to work out what is going to be the available time to meet. … I think it’s going to be good for her as much as anything else to get her going, to try and stick to this.  
(Interview transcript – 31/7/91)

The problem exists even when processes are carefully formalised, as with Felicity Simmons’ work transforming a book into an interactive text.

_Felicity_  Well, I originally talked to [a senior staff member] in production and we negotiated the contract and he then passed it over to an editor and one of the designers there. When we had actually drafted the contract we had lots of problems negotiating the amount of time it would take because obviously the [medical foundation] wanted it done very quickly and our production process tends to require lots of time and no pressure. So we had a problem in the sense that we had to try and concertina the amount of time we had originally thought this project would need. We had originally thought that the editor and I and the designer could all work on different aspects of the material virtually at the same time. So we sort of overlapped tasks in a time line and that is actually not how we are working, although that is what we anticipated. (Interview transcript – 16/9/92)

**Responses to time problems**

The times pressures discussed above, imposed on all involved in developing distance education materials, produces a range of responses. Some of them become a matter of ‘cutting corners’, as Felicity explained in response to a question implying that the time pressures were forcing her to follow a pattern she wouldn’t normally choose.

_Felicity_  Well, it made me, forced me to actually make changes to the text without checking with her to see if they were right in terms of the medical sort of aspect, or whether I was targeting the students, whether the words I was using were going to hit their target. So I didn’t really know whether I was doing exactly the right thing, but I had to go ahead and do it. She gave me a contact nurse with whom she works, also not working for the [medical foundation], for me to bounce ideas off. So after I had looked again at the materials I rang this woman up and asked what she thought of my suggestions in terms of actually changing the text and she thought this was all fine and yes that they had seen these problems and, yes, she thought that I should go ahead and do it. So I did. (Interview transcript – 16/9/92)

In this case, the time pressures forced Felicity into making some imaginative and creative additions to the materials, based on her own understanding of the given text. An uncertain situation, in nonequilibrium conditions, with
irreversible time ever pressing, moved Felicity to action that led to a new order in the materials.

However, similar circumstances can lead to the opposite outcome, as is illustrated by the result of uncertainty and time pressures on KC Leung. The frustration produced by delays was apparent in his assessment of the situation.

KC I must say that my reaction to the whole thing has been rather negative. For one thing the authors have procrastinated too long—they should have come up with the drafts a long, long time ago but they just delayed and delayed until the very last minute. They produced something not in perfect shape, so I had to do quite a lot of work—I had to do a bit of negotiating with them. Also [the editor] and I worked very closely together to get the various units printed out for the students, so we always had a very tight schedule.

This frustration led to what KC perceived were second rate course materials, something of which he was not proud.

KC Well, that had something to do with it, but I think we were doing something rather futile. Just because we had to meet deadlines. These deadlines should have been met a long time ago, I mean the task should have been started much, much earlier and so if that had been started much earlier, then quality would have been much better. Quality control would have been easier, and things like that. Everything was left to the last minute so we had to rush, and the outcome was understandably of an inferior quality. I was miserably responsible for churning out something so miserable, of such a low quality. (Interview transcript – 7/2/91)

KC was thus apparently unable to produce the type of positive outcome that Felicity managed. The irreversible time pressures simply led to greater disorder, with KC finding that the rush of materials production left him without a satisfying contribution.

As mentioned, Jane Hammersby struggled with time problems as well—she recognised the pressures under which the writer was placed, but felt the need to acquaint her fully with the scope of the task they faced.

Jane The lecturer’s very busy, of course, as everybody is, and one of the things I’m doing is pushing her hard at the moment, so if she is going to be in strife, we can start identifying that now ... I gave her the dates that she will have to be meeting for the deadlines and she fell of her chair, as they usually do. And I said that those are the outside dates and there is no further elasticity, and if you feel that there is going to be a problem, then now is the time to go to your dean and say ‘Listen, you must set my priorities for me, because I can’t do
everything’. I find especially with newish lecturers, I’m doing this all the time, I’m having to tell them how to run their own lives. (Interview transcript – 31/7/91)

Jane and her colleagues had long had to face the time and lost deadlines problem, and had started to take action in response. It marked a move from ad hoc responses to a formalisation of emergency tactics.

Jane You have a range of tactics. You start off being very straightforward with ‘these are the dates and this is what happens’, and then you end up doing a variety of different kinds of cajoling, don’t you? Again, however, this is extremely pertinent to what has happened, in our instructional designers’ meeting last Wednesday, one of the things on our agenda was this series of ‘what happens when materials come in late’, which has always been an ad hoc kind of thing. ... when the editor or instructional designer whoever it is who’s liaising with the author, is too exasperated—before they start swearing, they go to our head of department and pass the problem on to them. ... we have discussed a more formal way of going about this, in other words, when is ‘late’ late, and how do we progress into the back charging situation fairly.

Jane’s ‘range of tactics’ also included subterfuge, especially concerning the due dates that were given to the lecturing staff. Such approaches to the job provide evidence for the notion of the instructional designer as an ‘amicable guerrilla’, a metaphor introduced by Carl (1989). Jane expressed some disquiet when the ‘real’ dates were given out, leaving no ‘elasticity’ in the system.

Jane For instance, one of the things which we’ve done in the last two semesters which I was uneasy about was the deadline dates for our new materials, shall we say, were publicised in their real form. In other words, every lecturer involved with us was given the dates, the deadline dates for the department for submission of the introductory outlines, the first mailing date material and the follow up material. And the dates which were given were really the deadline dates, not with any elasticity built in. Now we have always, if you like, lied to lecturers!

Well, it’s an interesting exercise, but the trouble is, I suppose, everyone is used to this elasticity, and I don’t think believed people believed the deadline dates. As I said in our meeting, as part of the what do we do to formalise the system, make it better all round, I said if the current situation was allowed to run for another two years, let’s say, then maybe it would work, because people would then realise that there wasn’t any elasticity. But you have to run it for a while before people realise you mean it, and what has happened this semester particularly, is that because those were our absolute deadline dates and yet at that stage no mention had been made about backcharging [a system of charging departments for the financial consequences of materials submitted late], that you’re a very long way down the track before you
can start threatening backcharging. And so we would have incurred expenses, in other words, already, before we can start saying we are going to backcharge people.

*David* So all in all it wasn’t satisfactory.

*Jane* Well, it might have worked if we’d let it run for a bit longer, because people would then realise what the system was. But I recommended, and I believe this is part of the plan, that those absolute deadline dates would be brought forward a couple of weeks, so that then gives you more opportunity to produce correct warnings.

*(Interview transcript – 3/4/92)*

Jane’s reaction to the changes was thus a mixture of concerns, both for her work and relations with the lecturing staff, and for the normal expectations of the lecturers regarding deadlines. It was thus an attempt to deal with the varying durational expectancies (Toffler, 1984) of the participants. They accepted that in general their own expectancies differed from those of the lecturing staff with whom they worked, and developed a range of tactics that allowed everyone to cope with the unstoppable ‘arrow of time’.

Of all the participants, Nick Little was probably the least pressured in terms of deadlines and available writing and designing time, perhaps more because he did not allow time to interfere with the process. Rather, he adapted to emerging time pressures, in a ‘reshuffle’ of the timetable as he realised the problems that faced the team. As a result, course materials kept pretty well to schedule, as Nick explained when I asked him about the original expectations with respect to the time scales involved.

*Nick* We had a timetable. I’d drawn one up for each of the units, when the work would genuinely start, and so on. Now, when we sat down and started to talk about that unit itself, we discovered that it was far bigger than we originally intended, and therefore we did a reshuffle on when the other units would be expected to be up. We still felt that this was the right way to go.

... To be fair, that last semester, and they all went out and I think we missed one being out on time. But they all went out one chapter at a time. We decided to go one chapter at a time, and to meld that chapter in with the time that the students ought to be observing the plants.

So, what had seemed an impossible task in the time was handled by having a series of postings of material over a period of months, rather than a single posting of all course materials. Nevertheless, time became an issue with respect to course development, especially with the development of the video, a core
aspect of the subject. It provides an example of the new and unexpected challenges that can arise in an open system, in this case with respect to time. The aim was to film plants in different seasons, making the video production logistically difficult to produce.

Nick ... should we be including a whole year's worth of plants or only six months? The decision was made that it should be the whole year. So therefore we had now three components; a theory component, essentially plant forms, and two identification components, one for the spring and one for the autumn, that's what we called them. How were we going to do this, how were we going to do the practical component? Well, how was it done on campus. Well, there the lecturer takes the class around the garden and shows them and talks to them about the individual plants and relates that to the theory and the culture. Well, how are we going to do that externally? Answer, we do it on video. So therefore this unit, even though we might have started writing in January, could not possibly be completed until one year's worth of filming, because we filmed at the time that the students on campus were looking at the plants. And when was that? When they were in flower.

As well, Nick was willing to admit that, as the others also expressed, there is never as much time as they would wish for their work. He also looked at the issue more widely, acknowledging the views of other distance educators and experience in the wider world of design and development. I had asked whether there were other comments he wanted to make about time.

Nick Oh well, the answer is that they always take longer than you planned they would do, unless you're absolutely realistic. And I think there are people out there who are totally unrealistic, haven't got a clue. And of course you learn by experience or by other people's experience. Michael Moore wrote a little article at the front of his American Journal of Distance Ed about time and I refer you to that, it's just a two-page editorial. Basically it says they always take longer than you think, and when people ask how long does it take, he gives them some factors. The point is they always take a long time and you always underestimate things, and I don't think that is exclusive to the design of educational materials. It's the same as building a house, the Sydney Opera House, the Westgate Bridge, anything you like, I think you'll find that unless you are very good, and you're well experienced, you will underestimate the time. But then again, if you're given ten hours to do a job, then you do it in ten hours. I mean that's the other way to look at it. Then you have to bite your tongue. Or you have to break your pen in half, half way through or whatever, because you don't go in with the same view ... You know we've all got time, but yeah ... (Interview transcript – 3/3/93)

Again, the problem of durational expectancies arose, and in Nick's case, was accepted as simply the way things were. This attitude to time, along with its
irreversible nature and pressures, was handled by Nick and his colleagues and used in a productive way to develop what he perceived as high quality materials.

**Effects of time constraints**

Some of the effects of time pressures and restraints can be gleaned immediately from the previous section. The reactions of writers and instructional designers to lack of time produces a number of both expected and unexpected results. As might be anticipated, KC Leung, as previously quoted, became frustrated in his efforts, developed negative feelings about his work, largely as he perceived the outcome of all the development to be second rate, mediocre course materials. In his case, the system in which he operated was unable to move to a higher level of organisation and order.

Jane Hammersby’s observations hinted at pressures on her relationship with the course writer as being an effect of time pressures. Another effect was the procedures that her department was putting in place, that would mean increased costs for departments whose course materials were late. As she added to her previous comments, when prompted about when the students received their materials:

"Jane They will still get it at the same time but we are back charging because there is overtime being incurred by editors and word processors. There will also be an extra mailing that goes out, because we have major mailing dates at which we try and coincide missives to students and partly because they are often studying more than one unit at the same time. One of our major mailing dates was the 6th of April next week, but this isn’t up from print yet, so it may well be that we have to put this into an extra mailing in which case the costs of the extra mailing will be back charged. The students will not be disadvantaged; the students get materials as they needed them."

*(Interview transcript – 3/4/92)*

Felicity Simmons had previously mentioned about her time constraints, which had led her to have to change text without, as she perceived, proper consultation with the content experts. Fortunately, in that case, the outcome was positive. She added to her comments by tying this problem to the issue of quality and the level of work which she felt she could manage. That is, limitations to her professional input were a direct consequence of a lack of time. A certain level of time pressure might lead to a creative and ordered outcome, but there were limits beyond which it was simply not possible to produce high
quality materials. The irreversibility of the process produced a creative tension that, if left too long or allowed to dominate, would not lead to an acceptable, ordered outcome. I had asked what else she needed in her job.

Felicity  More time. You need much more time, and it is always the case that you don't have enough time to feel you have completed something. It depends again, it's sort of different levels of something. If you know that you are going to get materials at a certain time and only going to have them a couple of weeks before you have to send them to production, then you limit the type of work you do to certain aspect. If I know I'm going to have a long period of time to work on something I can work at a conceptual level much more. I gave you an example of a teacher wellness book where the concept upfront of the first chapter of the book has to be completely well formed if it is going to logically link all the rest of the text as a process of teacher becoming one. I mean I could ignore that and say that is not something I've got time to deal with. They've got the concept out of sync, then they will have to refine that at some later date. I think it is a crucial area of an educational developer's work to make sure the concepts are clear and to make sure that they are easily approachable by the reader or the student.

David  Is it also in the nature of our role in talking about times and things rushed and never quite being finished that there is no project we are ever do that we are going to say yes that's it that's perfect.

Felicity  Yes, I'm a bit of a perfectionist. I think that is very true.  
(Interview transcript – 15/12/92)

The deficiencies in consultation and consolidation mentioned by Felicity were also an effect keenly felt by YL Cheung, who lamented on the lack of time to develop proper teamwork, perceived as necessary in order to develop common aims and to share views. It was a reflection on the quality of materials that could be achieved, also as a result of lack of time to spend on the interactive aspects of the course, specifically the activities and their related feedback.

YL  Usually we get the draft so late, we can't afford to negotiate with the author the type and kind of activities that should be put in to tried out, suggested answers, giving them feedback ... . It's actually much quicker and easier to suggest appropriate activities at appropriate points at an appropriate level, because of the time. But once we start doing this, the author will kind of have a mutual agreement on the division of labour in the writing up. He takes it for granted that, in some sense it's true, that we may be more experienced in suggesting where and when we should put in some kind of activities. But then for the actual activity, I sometimes doubt whether we have that kind of good position to suggest ... .

The situation was so desperate, as far as YL was concerned, that the pressure had forced them into a frantic schedule that allowed for virtually no reflection,
no time to simply meet as a group to share information and discuss their aims and approaches.

YL We actually don’t have time to sit down as a team to discuss thoroughly what our aims ... . Actually we tried to give him a brief on our objectives, on our students, on our level, and that kind of thing before we actually sent out the materials. We tried to share this with him, but then, in that kind of written notes I don’t think we actually did much except for providing brief information. We actually don’t have time. We haven’t arranged a time for the team of reviewers, authors, [instructional designers] to sit together and talk about it. I sometimes don’t know to what extent we share a common theme and common objectives. (Interview transcript – 11/4/91)

Another outcome of the pressures was that the planned review of draft materials did not take place. The anticipation was that it would take place before the next edition of the course.

YL Actually we don’t have time to produce a neat and tidy draft for comment, and then copy the comment for distribution, so what we are doing now is we produce the draft and we print it, and we distribute it to the students, and at the same time we send it to the external reviewer. Our intention is that that kind of feedback will be incorporated in the coming year in the first edition, hopefully. (Interview transcript – 26/2/91)

An important effect of time constraints, mentioned by most of the instructional designers, was a perceived inability to further the range of media used within the courses. There was a feeling of being ‘locked in’ to a system bent on producing print based course materials, with relatively little encouragement or opportunity for creative use of alternative media. As Jane expressed,

Jane Oh yes, but there is more than enough constraint on me by time, more specifically the lecturer’s time. It would be wonderful to branch out into extra media, but nobody has the time to write a shooting script for a video, for instance. The facilities would be there, but nobody’s got the time to produce things like that. So we are relatively limited. (Interview transcript – 26/9/91)

Initial planning and design also suffered as far as Jane was concerned. It was lamented by her, especially as she found the ‘up front things’ more interesting than other aspects of her role.

Jane From an editor, yes, except as I said, I think maybe I do myself down sometimes because I don’t ... I dunno, it’s a case of drift, I would love to have more front end interaction with staff, before they have got as far as writing things down, but time constraints mean that very rarely happens. So I believe that everybody gets concertina’d
down the other end. You know, you get away from the more exciting up front things, and all get stuffed into things down the other end. You get squashed into the detailed areas. (Interview transcript – 28/2/92)

**Time: an open systems issue**

Time thus emerges as a pervasive issue in the work of instructional designers in distance education. For the most part, it is viewed negatively by them, although there is evidence that under some circumstances, time pressures can lead to creative and ordered outcomes.

Although it has been isolated as an issue in the preceding discussion, the reality is, not surprisingly, that it is just one of a number of closely interrelated concerns. It is thus acknowledged as somewhat artificial, though a necessary part of analysis, to treat it in isolation. To somewhat redress the imbalance, what follows is an illustration of how time, as part of an open system, is subject to an array of other concerns and issues, all intermingled and reacting with each other.

The way that it relates to other issues, as well as exposing the tension between this need for separate analysis of issues and the more holistic nature of the work of the instructional designer, can be illustrated as follows. The next extract is a lengthy one, taken from discussions with Steve Worboys, within which worries about time are intermixed with a range of other issues and ongoing problems. For the purpose of this illustration, it is offered as a two column exposition, with the interview on the left, and interpretive comments on the right. Particularly interesting is the way in which Steve varies his approach—at some times allowing the turbulence to form and continue, foreseeing its possible positive outcomes, while at others perceiving the need to facilitate the ordering process.
<table>
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<th>Interview transcript</th>
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<td>Steve ... I find a large part of my focus in my work is keeping a practical focus. The Chair is an ideas person who throws stuff around and I find that a lot of the time you say ‘This has to be done by the 28 August—you’ve got all your other duties to handle at the same time, you know’. I’m always putting a down to earth practical focus on what it is that they’re doing ... that’s not the only thing I do, but I’m aware of driving that side of things.</td>
<td>Looming deadlines put pressure on deliberations—need to move along and get practical concerns addressed. Steve thus sees himself as responsible for making order of the chaos.</td>
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<td>Steve The group’s idea. I mean one of the [other campus] people came up with the idea and they all picked it up and threw it around and ... a lot of crazy ideas came up. Part of my discipline, I found in the first couple of meetings, was to bite my tongue because part of me is saying you know for Christ’s sake get on with it, you know. You’ve got to make a decision some time ... but I think I could feel that one of the most important things in a group of people like that which is so different when you’re writing with a single writer is getting the dynamics right and getting some group energy going and that was what was happening in those first couple of meetings ... I think it ended up being the right decision to let things sort of go off the rails sometimes.</td>
<td>Response to video-taping proceedings for use in course and later research. Steve holds back from ‘ordered’ intervention, for the time being allowing the chaos to build. Emerging tension between making progress and development of positive group dynamics. Steve comfortable with decision to allow ‘chaos to rule’.</td>
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<td>They were talking about also using this video as a teaching tool for the very unit that they were teaching, you see. But this is in the context where they had no idea what it was they were going to be teaching—it was messy in the extreme. I had some warning bells going off about ‘your teaching materials have got to be more focussed than what’s going to be on this video tape’ ...</td>
<td>Worries concerning keeping the group focussed—concerns of ‘messiness’ —intrude as time passes. Differing ‘durational expectancies’ emerge.</td>
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<td>David From what you were saying before, there was this niggling worry with you that there were all these great ideas flowing around and you were feeling you wanted to say, come on let’s get down to it fellas we haven’t got a lot of time, is that it?</td>
<td>Pressure of schedule balanced by pleasing progress with ideas, along with useful recording of proceedings and feedback on deliberations.</td>
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<tr>
<td>Steve Yes, yes, but ... .</td>
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David: But you were happy with ...?

Steve: Yes, because, you know, I was pushing the schedule all the time, it wasn’t like they were ignoring that and they did set up these agreed schedule of meetings and I just cut in now and again sort of saying, you better start thinking about what this means in terms of what we are actually going to do and when we’re going to do it, and by the third meeting, that’s when they actually got down to, actually the value of the decision they had to have this outside person come along and record the brainstorming because she recorded the meeting and then made a synopsis of all the important points and alternatives, views, there were wildly different possibilities and plans being made as to how we could use the textbook and it was valuable having ... record everything so that in the week, then everyone had a copy of that and came to the next meeting with the ideas a little more thought-about. And in the third session they actually started thrashing out a focussed syllabus, marrying it to the textbook.

And that’s another thing I had to keep doing was telling them, ‘Look, you’ve made a decision to use this textbook now you have to use it.’ I mean you can create your own structure but it has to be a structure which includes the textbook and they kept flying off in tangents a bit away from that and I kept pulling it back to that and they ended up coming up with a six-section ...They’d wrapped up most of the chapters in the textbook into six sections and they are not directly linear. They are not following a directly linear pattern that’s in the textbook and they’ve allocated pairs of people to each of them. So if there are six writing members of the teams, they each end up being involved with two of the six sections which cover two or three chapters within the textbook and at the moment they’re in the process of doing some further—not quite writing yet—but more, we’re working through. The last meeting had a focus on the first section and the people whose job it is to write that were presenting some more of their ideas about how they could usefully shape the materials and they are getting an agreement on an input from the others. So they are all very keen that every section of it will not just be a matter of somebody going away and writing it and bringing it back to the group to review, but that all the group are involved in the actual planning of that writing even though it has a focus on one or two sections.

Perception of role as keeping the team on track—giving order to ideas and melding of textbook and course structure—acting as an attractor.

The group did not accept the order of the textbook, but made it fit the new order that had emerged from their deliberations.

Desire for an integrated whole for the course, not a collection of disparate parts.
Steve Because the [business degree] came in on line in a frantic, to a frantic time line ... a lot of the early development stages have leant to a shorter development phase than you’d like, so when I was discouraged with their idea of this video, you know it wasn’t just in a practical sense, but it was also because their thinking was way too vague and loose. But I did point out that even if you ended up with segments that might be useful in the case study sense it would take up a lot of editing and production work and time that we probably don’t have.

Perception of the possible value of the video versus the need to get the rest of the materials developed.

Again, differing perceptions of time available and time it takes to complete certain processes create extra pressures.

David You’ve mentioned about deadlines and things as we’ve gone along. Does time loom large as an issue all the time in your work?

Steve Yes, very much. This is one sort of degree of unease between me and say somebody like [a colleague]. I’m to some degree uneasy with my title as an academic. I mean, I’m happy to be called an academic, but not in the conventional sense of being an academic. I don’t see it as a big issue, I feel like I’ve got a job to do and sits somewhere between being an academic and being a general staff which is widely reflected in the fact you get a job as an instructional designer in some institutions and you’re a member of general staff and in others you’re an academic.

Explicit question concerning time immediately leads discussion off on a tangent into other concerns about unease with role title, specifically the academic status.

Steve But, my side of the ... I have an approach like I’m here to do a job and the job is to help teaching staff get their units/courses up and running in this manner that requires assistance and that’s what I get my satisfaction from. ...

Approach to job — focussed and practical.

Steve The sense of optimism that I carry with this unit in particular is largely bound up in that the chaos which was its beginning is just ... there’s an element of a doubt and worry about whether the chaos will settle down enough to end up with it being enough .... And that’s fair enough, when it comes down to it, I feel like ... I’m fairly practised, able to take the student’s position. There’s one advantage in the job here previously is that we had so much, our duties were so wide ranging I had a lot of contact with students which I think a lot of instructional designers don’t have.

Optimism tempered with appreciation of reality of constraints on the process, especially time. Worry about whether enough order will emerge.
... you are asking are dates important. They’re critically important—our students are better off getting something on time than a wonderfully presented unit half way through the semester. And time is also, with dates, is a lot of faculty staff don’t have any sense of what how much time is needed to go on to developing a unit. I mean a large part of my first session was justifying that and we work on really short timelines compared with how they used to work down at [the main campus] a few years ago.

There was thus for Steve a fairly constant tension in his work between the perceived need not to constrain the creativity of the team while at the same time appreciating the pressure to bring ideas to fruition in an ordered set of distance education materials. What also clearly emerges is that time is not a simple issue. As well as the pressure of the irreversible reality of time, there are other complex concerns at work, especially with respect to ‘durational expectancy’. The anticipated required duration for each of the processes involved in the design and development of the course materials differs among team members. Specifically, Steve is at times very concerned about deadlines, while the others are seemingly oblivious—their expectation of the amount of time required is at odds with his expectation.

Within the constraints—especially time—operating on virtually all the projects, how was advice on the design of learning materials in distance education given and taken? This issue was addressed by all the participants, and elements of the discussions now follow.

**Giving advice: working at the edge of chaos**

As a professional educator working with a variety of persons involved in the development of distance education materials, the instructional designer is expected to give advice. This section investigates how that advice is given and received, and attempts to elicit from the instructional designers what they perceive good advice might be.

In a previous section, Wendy Tsui had hinted that her advice as an instructional designer was not always heeded, and I followed this up. First, though, I wanted to know how Wendy thought she was able to help the lecturing staff in the
development of the distance education course. Her initial response was a little surprising, providing a comment that required more explanation to overcome my lack of understanding.

Wendy  I think that what we can do most is in the actual content or the actual syllabus of the subjects. But our influence will become much less when we go to the structure of the course, because that part is more related to the departmental policy.

David  I don’t quite understand ...

Wendy  Let me give you an example. I have just said that the course is offered in three modes, 3, 4 and 5-year. But in fact, this was not our first proposal to the department. It was a much more flexible system of offering options and allowing students to complete the course within a span of three to six years, even including one year of absence. We know that our type of students will be very loaded, very busy people; it’s because of the shortage of manpower in the field. Also that many of them are young women who most likely will become pregnant during the time of their study. So it’s really necessary for them to be more flexible, and even to stay away for a year to take care of their newborn baby if it comes, and so that was our suggestion.

But then because of difficulties with what the department said in arranging the classes, they rejected the idea. They preferred a more rigid structure of giving them only options of three modes. But then it turned out that no student opted for the 4 and 5-year modes, most of them opt for the 3-year mode. It ended up that everyone studies in the 3-year mode, with no flexibility at all for a distance education course. So that’s one thing that I find it’s difficult for an outsider from the department can influence a department, because this will affect the resource management that happens in the department. The course team will have more pressure from the department as a whole, and so even if some people in the course team favour such an idea, but still they have to opt for a more rigid structure.

So this answered at least part of the question about advice not always being taken. Determined to press further on areas of possible influence, I attempted to get Wendy to find examples of successfully given advice. What were the areas in which her advice carried most weight?

Wendy  I think it’s within the subject itself — what should be taught in the subject, and the approach of the subject. The [instructional designer] can initiate active interaction among the staff. I’m not saying that the [instructional designer] can be there to influence everything, to dictate everything, it’s not like that. But then, the [instructional designer] there can raise questions and initiate active discussion about what should go in and what should be the approach. In fact we have been debating an issue on this approach question for a long time, and ...

David  You say we have been debating, who ... ?
Wendy  By we I mean everybody in the team, including the author, authors sometimes, the course leader, which is Mrs Wong, and the [instructional designers]—because in the beginning we work as a team when designing the syllabus.

Again, after having been somewhat surprised by the initial comment about influence of the instructional designer on what is ‘within the subject itself’, the meaning had become clear as Wendy explained that it was the action of the instructional designer that stimulated debate among the lecturing staff of the department that was important. Such a stimulation can serve to raise the creative forces of the staff. The outcome of such debate was not always settled on particularly amicable or acceptable terms, however, as Wendy further outlined.

Wendy  ... it was not resolved in a very satisfactory way. I would say that it was because Mrs Wong was dominating... She was a course leader, so she has more influence, and she has a rather strong character, and when she forms opinions of others, it’s difficult to change her mind. So sometimes it’s very difficult to convince her ... at the time, people became very unhappy, and the role that we played, I mean the [instructional designers]... it’s really difficult for us to say which is the better, because we are not in their field, we don’t know the discipline. So all the time we were just facilitating them to propose the pros and cons in the debate. At the end, they had to make a decision themselves, but for this case I was not too happy with how it was resolved, because it was resolved not because the team found a consensus to the solution, but because some people became too fed up and became too unhappy, and they dropped out.

Thus, although her role as a facilitator of academic debate between members of departmental staff was clear to Wendy, she felt powerless to help bring the ensuing disagreements to an amicable solution. Sheer force of personality and position allowed the course leader to make the decision, much to the chagrin of other team members, some of whom used their option to withdraw from the project. In chaos theory terms, Wendy’s actions in stimulating debate can be seen as the action of an attractor encouraging enough turbulence to unleash creative forces and move the system, through bifurcation, to a higher level of order. In this case the bifurcation led to a new order, not necessarily the desired outcome, with a retreat to a stable, strongly ordered environment.

Later in the interview, Wendy outlined the way that advice was given during discussion concerning draft material within what was left of the team. By then, the disagreements that existed in the earlier group had dissipated, as its
composition had changed. I asked for details of what actually happened in their meetings, how they worked on the draft materials.

Wendy  Yes, we choose to work in a very detailed way, page by page. I usually invite the reviewer to give her comments first, and then I give my own comment.

David  Does this put pressure on Mrs Wong, because it’s all discussion on her draft? How does she feel about it?

Wendy  She welcomes Mrs Medway to comment on her drafts, because she really is aware that she herself has this lack in background. She is aware of this herself. And also she is in very good relations with Mrs Medway—they respect each other. And so the working relationship is very good. After a few meetings I rather see that, because of their good relationship, they have been good friends, that Mrs Medway was very cautious in giving her comments, and when Mrs Wong shows some resistance, Mrs Medway would retreat (David She’d back off.). Yes, that’s what happened. That has happened a few times.

David  Do you ever then come in to try to push things a bit further, or is it better to leave it?

Wendy  That depends, because in such cases I have to make my own judgement. If I think that Mrs Medway’s is really worth consideration, then I will stand on her side. But if I think that it is not really a big issue, then I will let them settle themselves.

Again, I was keen to discover what specific suggestions Wendy had made concerning the draft materials, and asked for examples of what she had suggested or advised Mrs Wong. Given Mrs Wong’s strong influence, Wendy’s attempts might be seen as an effort to break the order that Mrs Wong imposed and to increase the creative forces within the project.

Wendy  I pay more attention to how will the students understand what was written. I put myself in the students’ position. I look at the structure, I mean the way [the course materials] are linked together, presented, structured. The sequence—is it developed logically, is it something referred to later in the unit was previously explained, so that the students can really follow on step by step and build up a global picture. ... Yesterday I made the major comment to point out that the unit jumped into a particular aspect without defining what it was, and relating ... in fact, there [were] two different concepts presented in the unit. These different concepts were related in a way, but this was not explained in the beginning. And then the students do not have such a framework to the concepts and how they are related. But then these concepts come out later, sort of in a mixture, sometimes shifting from one concept to another concept, and I see that it creates confusion to the students. And so I bring this up.
This leads to a rather fundamental change in the unit—in fact, it leads to a change in the title of the unit. It was the unit on cognitive development. In most of the psychology textbooks, when we talk about cognitive development, we will refer to some profound researchers like Piaget, and the theory that they propose. But then, Mrs Wong has a different philosophy. For one thing, she herself may not be so proficient with what the theories were, and she knows that—she knows about her own drawbacks, and in a way she thinks that she will avoid it. And also she has another reason, which was put forward more strongly. She said that the students would not be able to understand these theories as they were, and so she argued very much that the theories should be integrated with the real happenings in the kindergarten, absorbed in the materials of the practice. That was her argument, and I find that it’s reasonable so I support it. In what she wrote, under this topic of cognitive development, [it] was not so much cognitive development—it only includes the theory of Piaget, and in a very brief manner.

But most pages were on what Mrs Wong called cognitive skills, and most pages were on how to help young children to develop their cognitive skill, like imagination, reasoning power, like observation power, and so she spent a lot of writing on this. So I point out to her that this, what she called cognitive skills, were not actually cognitive developments as it was originally quoted. In the beginning these were mixed, the two were mixed in the unit, the theory and this cognitive skills and I pointed out to her and finally she realised that she wanted the theme to be on cognitive skill, rather than on cognitive development. So now the title was changed to cognitive skills of pre-school children.

Thus Wendy was able to convince Mrs Wong, through her own background in education, of the need for a change of focus to reflect more accurately the content of the draft material. In this case, her power as an attractor was enough to bring significant change in the development process. This ‘crossing of the boundaries’ between content and instructional areas occurred with most of the participants, and was raised again by Wendy in later discussion.

*Wendy* It’s only that this particular unit is about lesson planning, so actually I myself have sufficient knowledge of this area, so in that case I can contribute a lot to the content side too.

*David* You’re crossing the boundaries a bit there?

*Wendy* Yes, yes, particularly in this unit.

*David* She feels happy about that?

*Wendy* I think she understands the situation, she understands that my background is education, and so she respects me in a way. She knows that I know, better than she does in this particular topic.

*David* And you have had to do some work on the content?
Yes, there is a section about objectives. After reading her script, I personally feel that she’s got some misconceptions about it, so I had a discussion with her and she was happy enough to accept my views. And we work out together another structure.

Do you do the rewriting?

She did the rewriting, but I gave her a framework.

Talking to YL Cheung about his working relationship with the lecturer preparing the course materials, it quickly became apparent that they enjoyed a harmonious working arrangement, an island of order in a sea of chaos. Pressed for time, the materials were being developed quite quickly, and I asked how their process of working together and YL’s giving of advice was taken. It transpired there was a pattern of activity with the development of materials that revolved around the submission and discussion of draft sections of a subject. The giving and taking of advice thus followed a steady and predictable path once the pattern was established.

Well, we usually start in this kind of pattern, right. First of all, we would meet for some 20 minutes time to discuss what to include. Usually the author will say what he would like to include in the unit. I may have some comments, suggestions in terms of what are the related problems that might be included, what is the purpose of the problems section, what is the logic in the sequence, what about some sort of guideline or outline of the unit. Usually the author will start working on his own producing the first draft. Then, after receiving the first draft, I will look at it and comment on it, make suggestions on changing sequence, clarifications, that kind of thing.

When prompted about the pattern that she tended to follow with respect to the giving and taking of advice, Jane Hammersby, like the others, prefaced her comments by emphasising the contextual and individual nature of the work.
Later in the interview, Jane surmised that her contribution was sometimes less than she would want in an ideal situation, as much for personal as other reasons.

Jane: I suppose that if I had more up and go about me, I could have more of an input if I wanted to. I will often have input into suggestions as to what I think should go into the tutorials and study schools, and also I had a really long discussion with Nicole right at the beginning to help her decide when they should be, how often they should be and that kind of thing.

In the diary notes that Jane had sent me, she had briefly summarised a situation in which she had worked through a particular development problem with Nicole. As the note had been sketchy, I asked her to explain what happened. It appeared that there had been a useful discussion, during which choices had been forced by ‘logical inclusion’.

Jane: When I wrote that, I thought ‘I am not going to remember what that means’, ... It was a case of she had included readings from different things, and there was a chapter here, and a chapter there, from texts. And I said does this mean you are going be making these prescribed texts, she then said what do you think? I said well its up to you to decide. Do you need to include this material? That’s what I mean by force a choice by logical inclusion. We had to go through the different readings she’d put in and I had to say is this an essential item. If this is an essential item and you’ll be having more of this essential material from this book then that may well lead to that being the text book choice. But she may have replied on a couple of occasions: ‘No, but I think its useful for them to have that,’ so we would then say can you please try and restrict the amount you use perhaps to the best choice for a reader. Although I had had a more abstract discussion with her on texts previously, it was only this sitting down in front of the readings she had listed previously that helped the choice of exactly what she wanted as a text book. By logical inclusion we went through each reading — was this a logical inclusion, should we include it, were there going to be more from this, therefore let’s make that the text. As well as also questions of how many texts that means they are going to have altogether and how much are they likely to have to shell out.

(Interview transcript – 24/1/92)

Marilyn Wu was somewhat philosophical in her assessment of the taking of advice by those with whom she worked, seeing that her advice was more a matter of making suggestions which the author then chooses to follow or reject. This can be interpreted in chaos theory terms as defining the designer as a ‘chaotic’ (Abraham, 1994) or ‘strange’ (Gleick, 1987) attractor, which influences rather than dominates the process. One that dominated would be a ‘point’ attractor, the single outcome to which the system is attracted.
Marilyn: We don’t have much power, in the sense that we can’t say this is no good, I’ll change it for you—but actually this is a personal working style. I respect these authors’ academic freedom; that is, I respect the way that they teach, and what they teach, and how they teach. I see my role as a sort of consultant and make them aware of teaching strategies available in distance education. So whether they choose it or not is up to them. Although we say that instructional designers are responsible for teaching and learning in the instructional areas of the materials, but I don’t think that we have all the authority to say this is no good, and it shouldn’t be going out. I had one experience with an author who was doing Mandarin and I insisted that it was no good and that it shouldn’t be going out, but eventually it went out. And I said that I am not going to do it, so they let me off, and so there was no instructional designer for that particular unit. But the [distance education department’s] logo is still on the material.

Like the others, Marilyn followed a pattern of commenting on a flow of draft material from the author, but found at times that her contribution was diminishing, due to the advanced and technical nature of the content. The attractor thus varied in ability to influence the system.

Marilyn: For that unit, what I did is again similar to other units I have done, to review and critique, and whenever I come across any things that I think could be improved, any activities, drawings, content sequencing, tables, presentation, etc. I give him some comments and he will change it and then it will go back to the Education Officer for mark-up and then it goes to production. But this unit to me is a bit difficult, especially as it proceeds to more deeper and more complicated and more difficult content areas, because I don’t have the engineering background. And so eventually, for the last few modules I tend to make it a very surface approach to critique. Sometimes I really don’t quite understand all the terminology. So I see that it is a surface manner critique. (Interview transcript – 31/1/92)

Marilyn thus perceived that her advice, or at least her feedback on draft material, was somehow less for a subject with which she had no familiarity. This issue of the usefulness of an instructional designer in having expert knowledge of course material is one to which I will return.

KC Leung was somewhat less salutary with his assessment of the success or otherwise of his advice and that of his colleagues. He readily admitted, though, that he was a relative novice to the process, and thus did not press his concerns particularly strongly, particularly when one of his more experienced colleagues was present. There were thus two attractors in the system, not necessarily working harmoniously.
KC

I had some long talks with Mrs Lo from [another institution], regarding activities and also regarding the length of her chapter—she was not very good at content selection. She put everything down that came to her mind and we had to discuss this—we did that on several occasions—it took every time more than one hour. So we sort of trimmed everything down to an acceptable length and also we tried to improve on the standard of the activities. On one or two occasions, not with Mrs Lo, with some other authors, Wendy was also present, and she had some ‘brilliant’ ideas to put forward to these authors. I think that most of her comments were adopted. You see, I was also sort of a trainee at the beginning, so Wendy sort of saw me through at the beginning. ...

Cindy is responsible for writing Units 5, 6, 7. So far, well she produced the first draft for Unit 5 a long time ago, about half a year ago. I returned the first draft to her after a couple of weeks with some comments and things like that, and we agreed on the form and the materials to be included and the activities and things like that. The agreed draft was passed on to Mrs Medway of [the academic department] and Wendy of our unit for reviewing. Both Mrs Medway and Wendy thought there was much more room for improvement than the two of us thought, so we had a rather lengthy meeting that lasted for two and a half hours. That was around the middle of July. Cindy had to rewrite the whole unit—she was a bit reluctant, but then she promised to do that, and then a couple of months ago we got the revised draft.

I went through the draft, and then had some discussion with Cindy, and I passed the whole thing to Wendy. Wendy didn’t comment, or maybe she didn’t at the time, but everything was in a hurry, so we had to pass it on to the editorial team for finishing touches before printing. So, it was produced and printed for student use—that was Unit 5. Cindy has given me a draft for Unit 6—we’ve now done a second draft. I worked on the first draft, then we had discussions and then we produced a second draft. It’s now with Wendy. That’s why she rang me just now; she’s not satisfied with the second draft, that’s why I have to go now, it’s very pressing. I think [the editor] has to go ahead with the editorial work despite Wendy’s comments.

David So she’s very unhappy?

KC She sounded very unhappy about the draft, but she’s usually very unhappy with drafts. I mean, she is usually exaggerating, from my point of view ...

This issue of emerging tensions between KC and Wendy will be further analysed in the next section. During the interview, I was also interested in the working arrangements KC had with Cindy and the others concerning their work together, and endeavoured to press this further later in the interview. Generally, he was happy and comfortable with the working arrangements with them. We eventually drifted back to the more contentious area, as I had wondered how the final decisions were taken as to what was acceptable and
what was not. Matters had not yet, though, reached a stage where arbitration was necessary. My specific question concerned who made the final decision if there was disagreement over the inclusion and quality of the activities.

KC My answer to your question is that I don’t know because I was never told what happens in such a situation.

David But I mean do you go back to the author and talk about these suggestions and then decide whether or not to incorporate them in the final draft?

KC Well, first of all I would decide whether I would incorporate them ...

David You make your own assessment.

KC Yes, whether to accept Wendy’s comments or not. But usually I pass on the comments to the authors.

David But you yourself accept responsibility in a lot of ways for what is going on.

KC Yes, of course. Not the authority, the responsibility. The situation hasn’t arisen yet in which, as you put it, a sort of arbitration ...

The lack of consensus over the quality of the units continued, however, and eventually reached a point at which the project could no longer continue as it was. Arbitration was sought, in this case in the form of the head of the instructional design team. KC’s unacceptable position as an instructional designer whose opinion was not accepted by some on the team was acknowledged, and he accepted the olive branch of the opportunity to change to a different project. Again, the somewhat intractable Mrs Wong appeared to have been at the centre of the dispute.

As mentioned, in chaos terms there were two attractors. This is not necessarily a problem in open systems, as long as they work harmoniously. In this case they weren’t, and the system became chaotic, leading to a bifurcation that led to a new order with just one attractor, a new instructional designer.

KC Well, Annie’s manuscript had been with me for quite a while—I mean that half of her manuscript had been with me, but the other half came quite late, and there were a lot of alterations to be made, so it took up quite a bit of time. But Cindy Lee’s unit was OK so we thought, but then in the last minute, the course organiser, Mrs Wong, told us that she found something seriously wrong with that unit, which we had considered to be perfectly alright. She thought that there was a crisis situation. [The head of section’s] attention was drawn to that opinion and so [the head of section] and I met—we had a sort of
emergency meeting, at which she decided that if I didn’t want to work on this Chinese project, I could be released to do something else. I said that might be a good idea, so I sort of gave up working on the project. So, [another instructional designer] was assigned to this subject together with a related subject, Practical Work 1. And then this so-called crisis situation was resolved. I don’t know how, they didn’t tell me anything about it afterwards. So, apparently Cindy Lee had to change quite a lot in her unit, and also she had to add some material to the basic draft.

KC ruminated that the experience had been a rather negative one for him, despite his initial feeling that his input had been meaningful and the materials of an acceptable standard. These feelings changed somewhat, so that by the end there was more of a sense of frustration.

KC

I started off with this subject actually, and I worked with Mrs Lo, the author for the first four units. That went quite well, though she also procrastinated a lot and there were a lot of delays. But still her material was very good—a bit long winded, so I had to do a lot of trimming, and she was wordy. I had to cut a lot of dead wood from a linguistic point of view, and also her presentation and so on, but I mean by and large her product was acceptable. When it came to later units, the trouble was that the course organiser, Mrs Wong and ... Wendy, these people found the content not quite in order. They didn’t agree with what the author wrote, so there came a time when we had to stop everything to discuss how we should change a unit, and the author was reluctant to change. So, we had a hard time trying to convince each other, and the heart of the matter was that I didn’t quite agree with my colleagues’ point of view. I sympathised with the author. But I must admit that the whole experience was not very pleasant. I didn’t quite like what I was doing: I didn’t think that I was very productive; I didn’t think that I was doing a meaningful job.

(Interview transcript – 7/2/91)

At this stage the discussion led into the issue of language, which will be left to a later section.

Nick Little’s initial explanation of how the project was started had reached the point where an initial draft of course material had been rejected by the course development team. I was thus interested as to what advice he then offered the writer, what process was followed, and how the materials came to be in an acceptable form. His approach was reminiscent of Rowland’s earlier quoted statement concerning the designer as ‘a self-organizing system capable of controlling both rational and creative processes, knowing when to apply each and varying strategies and tactics as the situation demands’ (Rowland, 1993, p. 86). Nick began by explaining how progress was made from the initial material which had been rejected by the development team.
Nick: To get from the first one that we slammed to the next one? OK, I sent her away to write more in the style ... to try that, and then I would ask her to send me that material. Then I would go through that material and I would edit it. Then we would come together and I would explain what I had done and why, every single line. I went through every line, every paragraph, every activity, even though I might not have written the activity, I might have said an activity is required here that does such and such. I might not know what the activity is, I didn’t actually academically write it, but indicated there was a need for this and why, and explained every one of those.

David: You seem to be implying that you wanted to get that first chapter for her to use as an exemplar for the rest.

Nick: Got it. Yes. In writing terms, in terms of style, in terms of approach, in terms of format, in terms of softness, in terms of also ... It comes back to me, I then edit it, work it up then come back to Carole and literally sit down side by side and we’d spend hours together going through every line and every page. And that happened in the beginning until I felt confident that Carole could do it on her own. And then my role slowly dissipated, and I would then make suggestions rather than do with her, even though I still edited. I mean, I’m a believer that if an instructional designer is doing his role properly, he actually does himself out of a job with that individual. Not saying that there isn’t room for discussion, sure, but hand-holding, you do yourself out of hand-holding. (Interview transcript – 3/3/93)

Nick: Thus, with the unfolding of the course through a series of drafts and the giving and taking of advice, Nick was following a similar pattern to the others. There is also a strong sense of staff development in his analysis of his task, as the need for his services declines over time.

David: In discussing her role as an adviser, Felicity Simmons, like YL Cheung, indicated the collegial relationship that developed in the transformation of the project she had taken over on behalf of her institution. The aim of the publication, along with the intended audience, loomed large as issues requiring resolution before the fine detailed work could be done.

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Felicity: In discussing her role as an adviser, Felicity Simmons, like YL Cheung, indicated the collegial relationship that developed in the transformation of the project she had taken over on behalf of her institution. The aim of the publication, along with the intended audience, loomed large as issues requiring resolution before the fine detailed work could be done.

Felicity: So Anne, the writer, and I agreed between ourselves that I would look at the text in general terms and in terms of what I could do to make more educationally valid the text as a book. So we were sort of shifting it slightly back to a resource kit idea which was originally there. We discussed that a lot and talked about the reason why she had made the decision to go from a resource kit to a book and what it would be possible to do if we wanted to shift it back to a resource kit. So the initial discussions were very much in terms of what is this book for, what is it expected to do, and in health terms it was very much intended to have an impact on the attitudes and understanding of health workers in terms of the [medical] issue. Health workers traditionally in health care institutions have felt that [the medical
problem] was a natural part of ageing and this in actual fact is not necessarily so.

This careful examination of the intended readership of the book/resource kit took some time to sort out, and Felicity needed to come to an understanding of staff and their needs in nursing homes before the detailed work could proceed. She thus focussed on context, knowing that a greater understanding of the system would allow her to function more effectively in bringing the system to a higher level of order. She needed to know what input would help to operate as an effective attractor within the system.

Felicity: Basically, that was part of the problem with the text, coming back to it in a round about way I was trying to explain what my input had been right at the beginning of the project when I had first looked at the book, and I was elaborating or setting up the framework so that people could understand what the input had been. So, basically, I had an initial look at the text and gave Anne some general sort of comments about the direction the book was taking in some general sense. In actual fact, because she is a nurse, she had targeted her messages in the book to nurses primarily in actually fact I think about 60 to 70 per cent of the workers in the nursing homes are actually nurse assistants, who don't have the nursing qualifications and therefore a lot of her messages were getting targeted to certain small percentages of the people she was really aiming for.

So we discussed those issues and also because she had written a book she had given no explicit statements of what she thought people should be doing in nursing homes in terms of [medical health] promotion ... so I suggested that I could actually pull out the activities that were implied in the text that she had written, and write lists of activities which could go at the end of each chapter. We discussed at the same time the fact that nurse assistants might not necessarily be interested. We talked about ways of getting nurse assistants to be interested in this book, and looked at issues of indexing and issues of the attractiveness of the text and the way the people could pick up the book and read through it and might look at activities first, and could be directed into the text by cross referencing.

David: To make it very accessible.

Felicity: To make it accessible, so in fact turning it back into a kit idea if you like, whatever you think a kit means. But that was the sort of input I had at the beginning, and I talked about those issues with her.

Thus, Felicity had made an assessment of the material, and her advice called for very significant change. In this case, that advice appeared crucial to the final shape of the learning materials, and this is pursued later in the section on
‘Activities’. I asked about her feelings on the success or otherwise of advice and suggested changes, and her initial comment was particularly insightful.

*Felicity*  I think that the changes that you suggest will be accepted by a writer if they are suggestions that they would have made themselves if they’d had maybe longer to reflect on the writing. Often a writer gets so immersed in the nitty-gritty that they really need a month to put the materials aside and stand back and then go back to the materials and they probably would have seen the flaws themselves and I see that part of the role of the educational developer to see the materials in the light of the intentions of the writer and to maybe see weaknesses in the material that the writer himself would have noticed at a later date.

*David*  Do you find that there is a lot of variability among writers with regard to their acceptance of your suggestions?

*Felicity*  Very much so. I think that’s an attitudinal thing. I think before you can make suggestions to a person you have to be seen as a person who may have intelligent comments to make.

The question is, then, how an instructional designer can gain credibility with the persons with whom they work. The issue of the contracting of a job was of relevance in this case.

*Felicity*  Well I think that that is just a process of working with somebody over a period of time in one situation where that is possible or in terms of if you are doing contract work, [the medical association] materials being an instance of that. I think that the fact that they are buying your work means that you’re going to be given credibility.

Following that, we returned to the specifics of Felicity’s work with the writer on the material. Felicity had made a note of a meeting with the writer, and I asked about the details.

*Felicity*  Yes, I took the computer up to her home, actually, and we sat down from mid morning to eight o’clock at night, going through the materials bit by bit with all the copies open—just checking and double checking things that I’d done and things she’d suggested and actually checking it on a final printout version and doing any corrections on the screen as we went through.

*David*  It worked out well, did it?

*Felicity*  It worked out … It is much the best of doing it if you work well with the person. It can obviously be difficult … in this particular instance it was definitely the best way to do it.

*David*  So everything has now been largely tidied up.
Felicity: Oh, I can’t say that.

David: Getting close.

Felicity: Well we had got to the point where I had suggested a new prevention chapter, I think I mentioned that in the last interview, so I hadn’t actually pulled the text apart and made a prevention chapter which meant that there had to be all sorts of changes to the other chapters also to balance them out. Since she had come back from England she had gone through that material and made suggestions of places where that didn’t work, where my suggestions weren’t good enough. So she had actually re-revised my suggestions although basically she took them on board. So we were going through that refining process. Also I had put activity sections at the end of each chapter and we went through those together. Throughout the text we were doing minor shuffles around in places.

David: Right down to editorial type work, or more global issues?

Felicity: Yes, we’ve left aside all the editorial things because as I keep on saying to her, if we see things we will do it, but were not focusing on editorial changes because the editor will actually get it after I’ve finished. So that would be a waste of my time, but we haven’t got quite to the end at the moment we’ve got through six chapters of seven. There is one more chapter to do which I hadn’t done before because of the structure of that chapter was reflected by the structure of the ones we have dealt with so it had to be left out.

David: So what happens now?

Felicity: Since that meeting I took all the materials back again and I’ve run through them again. I’ve dealt with the final chapter to make it reflect changes from the other ones and put in an activity section for that. I’ve put in an activity section for one other chapter which hadn’t been done. So the next time we meet we will go through those activities and through that final chapter and then we will go back to the beginning of the book which is the preface where she explains how the book will be used and in this case we will adapt it slightly to reflect the fact that we have got this new chapter and the fact that there are two groups of people and now there are the activities—so that there will be re-wording there. (Interview transcript – 6/10/92)

Steve Worboys was working in a rather different environment to Felicity, with team rather than individual involvement, leading to a different style for the giving of advice. Steve also gave a clear sense of, as previously quoted for Nick, the ‘self-organizing system’ (Rowland, 1993). He varied his strategies according to context, allowing the balance of rational and creative processes. As an attractor, he kept the team at the ‘edge of chaos’, giving it every opportunity to move to a higher level of order. I asked him specifically how his role in giving advice changed during the project.
Steve   Yes, it waxes and wanes. ... I was intensively involved in the first and second meetings, now less so ... or less intensively involved. I mean, I measure intensity by how much talking I do—in the first session I would have done more talking than anybody by a long shot. In the second less, but still probably no doubt most but a substantial proportion. Whereas the last two I have probably spoken less than anyone else in the team. My next burst is when they actually start doing some writing and I’ve got something in front of me to comment on in a sense of ‘this is our attempt at writing’.

David   So you’ll be playing the role sort of as a reviewer so that in the next meeting you’ll take along the things that might be standard features of the study materials, that they will use that to guide their drafting and, once they have drafted, both you as reviewer and the rest of them as content experts will come back into a meeting and look at what’s been done?

Steve   Yes, at the moment that review sort of thing has been going in two stages. I don’t know if it’s even two, but it’s an increasing level of concreteness. We’ve had our first overall brainstorming session, then they’ve come up with this syllabus design, then they’re having brainstorming sessions within a tighter focus, within a segment of the unit and it is sort of at that stage at the moment and then with each brainstorming session they’re getting more and more concrete as to what it is that they’re going to cover. So I’d say that we’ve almost got the first section pinned down, almost in terms of fairly detailed approach to that bundle of the topic and then, and that’s all they’re looking for at the moment, is that combined agreement on what it is and then the writing.

David   You are then sort of the vehicle that helps to bring this back down to a focus of reality?

Steve   Well, this is very much part of our ... providing the advice on the ... you know, like the presentation of this design, coming into reality. (Interview transcript – 4/5/94)

Steve thus perceived his role as an evolving one, changing as the team progressed with the design and development of the distance education materials. Part of his responsibility was to enable an initially sketchy design to become a reality, a functioning, effective course.

The giving of advice varied amongst the participants, in its manner and effect. Even for a single instructional designer, the ways in which advice was given and reacted to differed, depending on circumstances, as outlined by Wendy Tsui in her experience with a long-term project. Giving advice can thus be seen as highly context dependent.
The influence of the attractors appeared to have the most radical outcomes when the system was quite turbulent, that is, when at the edge of chaos. The outcome could be a move back to a stable, ordered state, as exemplified by Wendy Tsui concerning the withdrawal of team members, and by KC Leung concerning the change of instructional designers. Alternatively, working at the edge of chaos helped to encourage creative solutions to course design problems, as Steve Worboys outlined, and could lead to substantial change in the course materials, as explained by Felicity Simmons.

**Teaching and learning strategies**

A specific aspect of the issue of advice is that of the teaching and learning strategies adopted by instructional designers in distance education. If instructional design is to do with creating effective learning environments, then a key aspect of this is the instructional designer’s belief in and approach to teaching and learning issues.

In his discussions with his development group, Steve Worboys took a non-prescriptive approach to his role in the team. One aspect of their deliberations was the teaching and learning environment of the course, and the relationship of the study materials to the chosen textbook. I had asked about the focus of considerations of teaching and learning issues.

*Steve* Yes, it is a wider focus. They’re not following the textbook and I guess that was something that I was encouraging first. I said textbooks are by their nature grey things: they’re written to the widest possible market; they don’t reflect your teaching personality, what it is is specific things you bring to it, to the unit, and so they had spent a lot of time wrestling with it. What it is that is going to get this unit their character as a group — so they are developing case study approaches which overlap, overlay sections of the textbook. They’re bringing a particular focus on to do with efficiency as an organisational aim, as an overall focus to the whole unit which isn’t in the textbook; and so to do that, they’re having to think in terms of their teaching style.

Steve’s efforts thus seemed focussed on a facilitative role, confronting the team with the teaching and learning problems they faced in the project, and forcing them to make choices and decisions about how they were to present the syllabus. He was in no way attempting to bring them round to his own model of teaching and learning, or his perceived notion of how organisational theory should be taught at a distance. Rather, he wanted to draw from them their ‘teaching personality’, what it was about their approach to organisational theory
that could make the course a meaningful learning experience for the students. He thus forced them to confront the complexity of the learning experience, a creative tension that would hopefully result in high quality materials. As it turned out, it worked well for both him and the team, as it diffused any initial antagonism held by a member of the team.

Steve ... that was the first point I wanted to make—that I wasn’t there to tell them how to do it.

David Did that surprise them, do you think?

Steve Yes, it surprised them, and I think it added to their discomfort to a degree. It probably would have added to my discomfort if I’d said the opposite, because I probably would have got it, especially by this other guy, or just played right ... What diffused him was that he was probably expecting me to come in here and say that this is what we’re doing, but I have to say that, in fact when you walked in here today—I’m now showing you something, a little handout called ‘Standard features of study materials’—which is just ... the point you were making. ... It was all very well for me—and I think it was the right thing to do—to say look, there’s no cookbook here, that I very much want the design of this unit ... to come out of these meetings, from your inspiration, from your knowledge at the insistence from me, because I’ve got a knowledge of the background of where this sits ... and a lot of experience in developing other units. But that’s just like an assistance to you, it’s not a prescription for you.

So, I mean—I’m sure you’ve been in the same situation—you know what that does, immediately gives people freedom that they didn’t think they might have had. But at the same time it gives them responsibility that they can’t hand over to somebody else, and having taken that position, which was fine, it ... got sorted out ... But then I find myself saying things like ‘You need to realise we can have readings and that there are standard features, there are guidelines to this [business degree] and ...’

There were thus limits to the freedom, and Steve found himself almost obliged to start imposing those limits, but in the sense of providing focus and assistance, given the direction that the team had chosen to follow. The intervention had to wait until the turbulence was faced and possible solutions arose. His experience with a range of approaches to the development of distance education materials put him in the position of an adviser who could help to structure the discussion and output. He could, again, be thought of as the attractor around whom the chaos up to that point was about to find some order.

Steve ... they immediately wanted guidance on that; and that hadn’t been developed, and that was what I’m right in the process of doing at the moment is drawing up a handout which provides, without being ... prescriptive, ... as part of the design of the [business degree] ...
the basic information will be presented in exactly the same way in each unit. It is an important learning strategy that students can easily navigate their way through units within a whole program; they’ll find the same information in the same place.

Steve prepared a handout for the team, to give unity to their developing ideas, and to provide continuity with other subjects under development within the degree structure. It had been specifically asked for by the team, as a natural part of their evolution and growth, and a desire for Steve to put in writing the sort of advice and comments he’d been making in the meetings. He was more than happy to oblige.

*Steve* Because I kept throwing in, I’d butt in with saying, ‘You know, this is how we’ll have to do this because …’ and then they’d say ‘Well you keep coming in with these things that you know about and we don’t. Could you let us know?’ And yes, I immediately saw it as a really good idea in creating it. (*Interview transcript – 4/5/94*)

Thus Steve was perfectly comfortable to respond to the suggestions and demands of the group. They perceived a need for them to make use of Steve’s expertise in having him produce basic guidelines on the shape and style of the course materials. It is interesting to speculate that, for this group at least, it was a much more productive approach than if Steve had turned up at the first meeting with a ‘handbook’ of how the design and development was going to proceed.

At the other end of the spectrum, Nick Little worked in a painstakingly manner on the draft materials, keen to modify or add in a way that he felt encouraged student learning and interaction. I asked whether both he and Carole ended up writing the materials.

*Nick* Yes, we did. Well, we’d sit down and I’d say this paragraph is lacking, there’s a link missing. Generally, once you’ve established a style of lightness and personality and colour and writing in the second person, it comes down to the things that often are missing are the links. There are assumptions that students understand the links. And often it was that stuff that was missing. How do we link this paragraph with that? How do we link this part to that one over here?

Following up later, I wanted to know from Nick what the specific features were that made the course materials ‘friendly’, to use his word when talking about the merits of a particular unit.
Nick: I haven’t got the unit here, but I have the next unit. It’s attention to detail, such as, what you need for the chapter, before you start—key words that are going to come up in this particular chapter and symbols in this particular case. Little graphics, making sure that the activities are sensible.

I pursued the mention of the activities, discussed in the next section, in an effort to discover their aim, typical approach and the form of any feedback. Nick answered my questions with a specific example taken from the unit he’d located.

Nick: I mean, here’s Activity 1, soil profile: ‘The results of this activity should be recorded on to the yellow pages to be submitted as part of your assignment.’ So they are actually doing part of their assignment in their activities. I’ll just turn over to another page: ‘Take a small sample of each of your topsoil and subsoil, using a hand lens or magnifying glass look at it closely, draw and describe what you see. For this activity you will need X, Y and Z’, and then it sets out ... ‘note or draw the results’. Now, those are activity based, but also there are other ones that ask you, for example, list five functions of a root system. OK, now that’s obviously following up on what’s talked about. But then later on, at the end of the chapter, there are the answers.

So it’s attention to that sort of detail ... we should be guiding external studies students into how much, the quantity of their responses, not just the quality; the quality will tell you, if you list five functions, you have five lines. If you say pass comment on X, and you supply three lines, well that’s different than supplying thirteen lines. You are asking for a different form of response with three lines than with thirteen lines. If you have no lines at all, then how does the person know what sort of response they’re expected to give. The quality of the responses can appear in the suggested answers, and they are suggested answers, as distinct from definitive answers, because a lot of these are not definitive. So it was that sort of attention to detail, a lot of attention to graphics, the use of icons; I mean I know a lot of those aren’t new, but a sense of unity, that they can pick it up and read it anytime after they’ve studied it and still get something from it. (Interview transcript – 3/3/93)

Nick and Carole had apparently thus put significant effort into the quality of the learning experience of the students in the course. The activities had a variety of aims, and were at times integrated with course assessment.

As YL Cheung explained his development and input to instructional development projects, he found difficulty articulating both what he gained from his induction and his subsequent approach to the role, in terms of his contribution to teaching and learning. It is tempting at this point to speculate that the process he experienced was one of honing his ‘enlightened eye’, his skills as a critical connoisseur of educational materials. Specifically, his
comments often had resonance with Eisner’s concerns with perceptivity and ‘consciousness of what is significant’ (Eisner, 1991, p. 230). As a relatively inexperienced instructional designer, YL didn’t display the quiet confidence of Steve, but was nevertheless prepared to trust his own judgement and make suggestions for change. I tried to discover what he found helpful as far as teaching and learning approaches were concerned.

YL I don’t think I can tell that very explicitly in terms of certain kinds of techniques ... When we talk about that kind of signposting ... editorial work or that kind of thing, the importance of student activity ... overall structuring, I think you can read that kind of thing and learn from other people’s examples or books. But then they are technical and mechanical, in the sense that you can easily put overview there, preview there, activity there, without improving the quality of the learning material, so to speak. ... But when it comes to the real crux, I think it is some sort of intuition, as I have said. I just read it, I feel that something’s wrong, sometimes I don’t know what is wrong, I have to read it again ... you just give some sort of suggestion out of your own ...

David You have the confidence as an experienced educator that you can grasp what’s needed?

YL When you say confidence, I don’t know whether I’m confident. I give some suggestions and we usually talk it over ... Sometimes I don’t know whether my suggestions are really workable.

At this point I changed tack slightly in the questioning, by introducing the notion of quality and how it might be assessed. Specifically, how did YL determine whether what he was helping to develop was of good quality or not.

YL Sometimes it’s subjective. You find the structure acceptable, logical, this kind of thing, and I don’t think we have any objective rules that say that the structure of the text in this way is logical, structured this way is not logical, we don’t have that kind of rule, we just from impression, from subjective judgement, our own experience in teaching, learning, we have been reading other texts, that kind of thing, it’s really difficult to tell. (Interview transcript — 26/2/91)

What emerges from a consideration of teaching and learning strategies is that the instructional designers were not strongly prescriptive in their advice. Rather, the role was perceived and acted upon as being a responsibility to provide a range of possible approaches, or to draw out and apply successful classroom teaching strategies to distance education.

Activities
Part of the teaching and learning strategies of most distance education courses are activities of various forms. A key concern raised by the participants was the use and quality of the activities within the learning materials. It was often perceived as an area in which the instructional designer had more experience and knowledge than the others with whom they worked, and so each tended to be quite confident in the usefulness of their contribution to the development of learning activities. It was also almost an unwritten assumption that activities which engaged students in a form of interaction with the materials must be included.

YL Cheung explained the relationship that developed between himself and the author in the preparation of the course he described.

YL In the present mode of our working relationship, the author concentrates more on the content area, and he usually does not write up any kind of learning activities, that kind of thing. He says that he is not good at it. So usually I suggest where we should include activities, what kind of questions we should ask. So in the first draft, what I try to do is I comment on the content area, make suggestions on the sequence, clarification of certain points, I suggest some kinds of activities ...

David Would you end up actually writing some activities on occasion?

YL I write up most of them! But then they are suggestions — usually the author will look at them, modify them according to his own expertise, and then the author will take up the comments. He will read it, write up modifications, provide feedback for the activities, that kind of thing. This kind of process depends on the original draft, the extent of modifications or change that is necessary. It usually takes two to three drafts until we reach a more finalised version, but then we still do not treat it as final, because, as I said, I know nothing about pre-primary education, the author knows nothing about pre-primary education, so we have to ensure that what we’ve written, the examples, the activities, are relevant to the needs of the pre-primary educators. ... we pass it to Winnie for comment, especially in terms of examples and activities. Then we usually have a meeting with Winnie after she has read through it to discuss the appropriateness of the activities, appropriateness of the feedback, and after that, we consider that finished.

In the next interview about six weeks later, I was interested to hear whether the pattern had changed, for example, with respect to the writing of activities — had the writer become more proficient, producing his own. YL lamented that the pattern, once established, was hard to break, especially under time pressures.
I think that once you have started this kind of pattern, the author has no intention of reverting back, so that I am thinking that if I’m given this kind of job next time, I will insist from the very first chapter that the author suggest the kinds of activities first. Once I have written for the first chapter, I have to write for the second, until the last.

Do you think that at times we almost become too helpful, in that we’re so grateful to have something, that we then put a lot of work in ourselves?

I think that there may be two reasons. The first reason is that usually we get the draft so late, we can’t afford to negotiate with the author the type and kind of activities that should be put in to tried out, suggested answers, giving them feedback ... . It’s actually much quicker and easier to suggest appropriate activities at appropriate points at an appropriate level, because of the time. But once we start doing this, the author will kind of have a mutual agreement on the division of labour in the writing up. He takes it for granted that—in some sense it’s true—we may be more experienced in suggesting where and when we should put in some kind of activities. But then for the actual activity, I sometimes doubt whether we have that kind of good position to suggest ... . (Interview transcript – 11/4/91)

Thus, despite his misgivings, YL continued to be principally responsible for the activities within the course materials, largely because of the pattern that had been developed in the initial drafting.

As intimated earlier, tension had arisen between KC Leung and Wendy Tsui concerning the quality of the learning materials. Keen to find out what it might be about the materials that two instructional designers should disagree so much about, I asked KC about the source of Wendy’s unhappiness.

The activities, usually the activities, not the content, because she claims that she knows quite a lot about children and things like that, but I doubt whether she knows it in a professional sense. I would say as far as the content—the subject matter is concerned—she is not quite in a position to comment, as I am not in a position to comment, but she is always unhappy with activities.

She thinks they’re wrong, or ...?

Too low level and too few, usually not enough. I think her dissatisfaction is not very realistically founded. That is, I would imagine in practice the students would benefit from the activities Cindy has in this case already put forward as suggested designs. In other cases, other authors designed those activities which she found rather low level or inadequate or whatever. She would come up with ‘brilliant’ suggestions which may not be practicable—too high level. This is a certificate level course, and I would say she is doing everything from a very theoretical point of view without any reference to practice. I’m not sure how long she had taught before joining the
[department], but I would say she is totally out of touch with the learning population. (Interview transcript – 7/2/91)

The source of tension was thus the activities, a key component of the teaching and learning strategies adopted for the course. The split between KC and Wendy on such a fundamental part of their contribution led to the previously described confrontation and the end of KC’s involvement with the particular subject.

The relationship between the activities and the general content of study materials during development can become complex. Though it is usual for the activities to arise from the presentation and discussion of concepts, the activities themselves can then in turn influence content. In her exemplar project, Felicity Simmons’s assessment of the type of activities used in early drafts led to a major shift in emphasis in the project. During an interview, the conversation had moved to the specifics of her advice, and again, like others, Felicity explained how she came about to be writing at least some of the activities.

Felicity ... I had already given input, and that was input which was looking at the text from a different perspective and making suggestions. So from there I in actual fact did write draft activities and started working through the text and all chapters looking at the consistency and pulling out the implied activities ... One of the problems there was that ... Anne had to go overseas for a couple of weeks, so rather than working very closely together I was left to get on with it in terms of rescheduling. So I knew that the danger there was that I would stray, you know, go up a wrong path in terms of actually doing things with the text.

After explaining the time pressure problems, investigated earlier as a separate issue, we discussed the actual drafting of activities.

Felicity Well, when we had the first meeting ... I felt that I would be able to make suggestions for the activities which she had implied in the text. So I was saying that what I would do is analyse the text and write a draft of possible activities. So I would do that analysis, and then the idea was that we would come together and we would go through very carefully these activities and redraft them so that they were really hers. That was the intended way that we were going to work. But in actual fact I had to do that, and I had to write them down and firm them up because she wasn’t there. In a sense I certainly did more than I would normally do because I would have been referring to her a lot more in a normal situation.

David She’s been fairly happy with how the activities have turned out.
Well in actual fact she has, yes. And since then, we have gone through the materials and she hasn’t made many changes for the activities. What did happen though, when I went through the materials again, after our first meeting that I realised that she was targeting so heavily towards the nursing people in the nursing homes and she wasn’t in fact giving any potential activities for these nurse assistants. It was only through going through and trying to bring out the activities that I realised that they were all nursing activities. They were all for the qualified nurse. There was nothing there that she was suggesting for the majority of the workers in the nursing home. So that meant that meant that there must be something wrong with the text. That’s when I talked about it to the extra woman who said ‘Yes you are right’, and I was talking them in terms of the difference between what the nurse starts to manage patients problems and what the nurse starts to prevent things from happening. Now they have in the text no distinction between prevention and management. And from a nursing point of view they see management as including prevention. That is the nurses’ perspective.

But if you were talking about a person who isn’t a qualified nurse they are not allowed to manage patients. Manage is a very technical term here. They are not allowed to manage patients’ problems so how can they possibly be doing any of this stuff to do with [the medical condition] because it is irrelevant to them? So that is a very critical issue that they had to deal with. I found out that we had to do something, I had to say that, but the outcome of the whole issue is that she has to split, take her preventive section out of the management chapters (assessment and management chapters) and put them into another chapters called prevention which is for nurse assistants.

The question of whether the instructional designer ended up actually writing activities within the materials, or simply made suggestions which prompted the writer in their preparation, was one to which Felicity had given some thought.

Ah, coming back to my question, to your question, which was about the educational developer’s role in writing activities. I’ve thought about that question after we talked, and in actual fact a lot of my work has been involved in writing activities for materials, and certainly sometimes I would do that and at other times a writer would do that if they were missing and they were appropriate. I would certainly feel that I could make suggestions of activities, because you can always take a text which teaches something and suggest what appropriate activities might be. So yes, I would see that as an educational development task. (Interview transcript – 6/10/92)

Felicity was thus confident in her ability to play a key role in developing interactivity in the learning materials through proposing or devising activities, perceiving this as a quite natural part of instructional design.
Activities hence emerge as something of a catalyst within the issue of advice giving by instructional designers. As a direct outcome of a given approach to teaching and learning, they have great influence in the process of course materials development. Deliberations on activities can bring a turbulent system to a point of bifurcation, leading to a range of outcomes. In the case of KC Leung, it was a dispute over the quality of activities that led to conflict and his eventual departure from a project (see pp. 145, 159). For Felicity Simmons, it was her work on the activities that led to a major shift and apparent improvement in the course materials. The bifurcation thus led to a higher level of order.

Product emphasis

Several issues that emerged, though while not apparently directly applicable in chaos terms, nevertheless revealed aspects of the complex environment within which the instructional designers worked. An example that applied to some of the participants was the issue of working in a second language, which will be explored in the next section. Something that seemed to affect all the instructional designers, however, was the implicit product emphasis displayed in the discussions.

For all the exemplar projects, there was a constant underlying assumption that a print-based core was central to development. This revealed itself in a number of ways, often in the terminology used by the participants as they talked about the design and development process. The terminology was very much that of a publications oriented process.

Selecting relevant words from a typical interview, the following selection reveals the pattern.

Wendy ... draft ... trial version ... write ... reviewer ... page by page ... writing ... produces a first draft ... good writer ... reading her script ... author ... proficient in writing ... (Interview transcript – 16/7/91)

Other associated terms which arose in the discussions included ‘chapter’, ‘editor’, ‘format’ and others with associations with book production, including ‘copyright’ and ‘production’.
Of course, there was always the danger that I had introduced some of these terms myself in the interviews, or had couched my question in such a way to elicit responses with this slant. My checking of the transcripts revealed that I had, for example, used the term ‘author’ to one of the participants, but only after she had used it earlier in the interview. The terms thus seemed to be a part of the participants’ common vocabulary.

There was thus an apparent institutional belief that the process revolved around the writing of ‘chapters’ by ‘authors’, and that ‘drafts’ would be reviewed until approved, to be eventually handed over to an ‘editor’ for production of perhaps a ‘trial version’. Of course the terms varied slightly, with some institutions having ‘units’ or ‘modules’ instead of ‘chapters’, and using ‘writers’ instead of ‘authors’. The term ‘writer’ has been used a number of times in this thesis, including during interviews by Felicity Simmons (e.g., see p. 149), and is found in the literature, such as that quoted from Riley (1984) on page 63.

The problems of the print domination of distance education have been discussed by Evans, who categorised the ‘tomes’ of textual course materials as ‘monuments to our curricular stolidity and pedagogical ineptitude’ (Evans, 1989, p. 117). His observations concerning ‘the ways and extent to which text shapes our teaching’ are congruent with the revealed work of instructional designers in this research. This includes his claim that ‘the pace of life on a course team is the pace of handover dates for print production’ (Evans, 1989, p. 118), as verified earlier in this chapter.

There is a number of implications arising from this fundamental position adopted in designing and developing distance education materials. One is that instructional designers spend the bulk of their time and energy working on draft material, at times at the expense of the design of the learning environment. The process becomes so institutionalised that it becomes natural to move swiftly into writing and drafting, without much consideration of broader design issues. The time issue also looms large here, with pressures to get on with the job, as deadlines are often short.

Another outcome of this approach is that the use of other media for teaching and learning is relegated to something extra that might be added if there was more time. As Jane Hammersby previously commented,

*Jane* It would be wonderful to branch out into extra media, but nobody has the time to write a shooting script for a video, for instance.
The facilities would be there, but nobody’s got the time to produce things like that. So we are relatively limited. (Interview transcript – 26/9/91)

Thus, circumstances and events seem to conspire to perpetuate the dominance of written prose in distance education materials. It has become the ‘natural’ core of all courses, to which other media might be added if only more time was available. In the cases, only one had any significant use of other media, that being Nick Little’s use of videotaped material.

In terms of the chaotic concepts embodied in this thesis, it seems that instructional designers, in not generally perceiving text as problematic, are not allowing any turbulence to emerge on this issue, which might lead to more creative outcomes in the use of media. The only explicit evidence of discussion of the influence of text was Steve Worboys discussion with his team concerning the use of prescribed texts (see p. 153). Print domination is thus a form of order that influences the design and development process.

**Designing in a second language**

Not surprisingly, for those instructional designers working in a second language, the language of instruction was an issue of significance in their work. The three designers in Hong Kong were all involved in English language course development, as well as the Chinese course they chose as an exemplar. Thus, discussions around the issue alluded to possible differences in English versus Chinese courses and course writers, as the following extract shows. I asked YL Cheung about the differences or potential difficulties.

**YL** It’s difficult to say. I think it depends on ... There are two questions, actually. The first question is ‘Am I more relaxed in working with a Chinese rather than with a foreigner?’ and the second is ‘Do I find it easier working to produce materials in Chinese?’ Am I correct?

**David** Yes—actually, I hadn’t thought of the first one in terms of the people. I was only thinking in terms of language, but yes, you are right ...

**YL** For the first question, definitely, because I think, ... To be honest, actually, we can communicate better in our native language. We have common culture and background, and then, with that kind of thing, we work well—a more comfortable relationship in that sense. So the answer is yes. But then it also depends on personalities, I think. That may be one of the factors—there may be personality clashes. I
don't know, I haven't had one, but I heard that other [instructional
designers] are having hard times working with Chinese staff in other
departments, so I think it may be one of the factors, but then it may not
be that influential. But definitely I feel more comfortable, ...

David ... OK, what about the second question, then?

YL The second one, it's hard to say. I think that using Chinese
on its own is more difficult, because we are not able to make use of that
kind of word processing, that kind of technical support. The
developmental process actually takes more time ... . From that technical
perspective, I think it's more difficult. In terms of the language alone, I
don't see any difference between using English and Chinese. I think
that we may have more difficulties with spoken English. But then, in
terms of written things, there's not much difference, because we are
used to reading and writing a lot of English. (Interview transcript –
11/4/91)

YL was thus comfortable with working in either language, with a slight
preference for Chinese, but found Chinese courses more time-consuming,
principally through technical factors.

Wendy Tsui was more strongly of the view that it was easier for her to be
working in Chinese, especially when commenting on drafts. I had put to her the
same question I asked YL.

Wendy That makes a lot of difference really. Working in the first
language, I feel it's much easier. It's not because of the reading – for the
reading part they are comparable, because in terms of reading ability I
think I'm equally well in both language. But then, when I come to ...
I'm used to jotting down my comments, both in the margin, and I also
give the authors a sheet summarising the general comments. When I
work in the first language, I can do it very quickly. I can scribble down
any words that come into my mind very quickly. But then in English, if
in particular I work with an expatriate, I have to be very careful,
because I don't like to produce a sheet which is full of grammatical
errors. And so it takes up more of my time.

What I had come to appreciate was that, for the Chinese instructional designers,
there were four different possibilities with respect to language and the course
writers with whom they worked. They might be developing an English or a
Chinese course, with either an expatriate or Chinese writer. A complicating
factor is the tendency for Chinese staff to write (and speak) in a mixture of the
two languages, a phenomenon I had also witnessed in lectures for local students
in Hong Kong. Wendy explained some of this further as the interview
progressed – I queried whether there were any difficulties with local staff when
her English was better than theirs.
Wendy: The problem is less than when I work with expatriate staff.

David: And then we use editors anyway, so ...

Wendy: Yes, yes. But for working in Chinese language, it’s different because the writing can be ... in fact, I always write in a mixture of Chinese and English. I think this is a particular scene of Hong Kong. People in Hong Kong ... when Chinese people communicate, we accept that as normal, so it will shorten the time that I need to think about phrasing the sentences, etc. ... so I can do it very quickly.

David: So that’s a difference even if you’re working with a local member of staff. It’s still easier in Chinese, there’s still a lot of difference between Chinese and English.

Wendy: And I can also contribute in a way to the sentence, to the way that the sentence is written, the sentence structure, so as to bring out some ideas more clearly. But in English I usually try to leave it to the editor.

David: But things are done similarly ... I mean I don’t know a lot about Chinese, but are similar things done to improve Chinese to improve the language as you would do to improve English written language?

Wendy: Yes, I think it is similar. I would think that the difference is more with the subject than with the language. If it is a different subject, then I feel that approach is somehow different. But for language, it’s similar, more or less the same.

I had also wondered about the effect on Chinese language ability of having a constant mix of the two languages, and raised this in the interview. Specifically, I asked about the range of abilities in Chinese among the local staff.

Wendy: Also a big range. Most of the people in Hong Kong, when they manage to get to this kind of position in tertiary education, they were educated in English schools, so their Chinese is not that good. And so many of them, when they are writing Chinese, they only try to translate from the English textbook that they read, and makes it very clumsy. And sometimes it’s not readable. We have this kind of problem with the subjects in this project, Pre-primary Education. There is an author who really translates from English books, and those sentences are very technical. And so it reads very funny.

David: And so, as a connoisseur of Chinese, you don’t like the look of it. Is there anything else about the fact that this course is in Chinese? Has it meant that greater production resources are needed—the desk-top publishing, editing and all that, does it make it harder?
Wendy: On this, I don’t think I have enough information, because I’m not involved in the production part. Maybe [the editor] can give you more details.

David: Because you’re working with technology that’s been designed for English ...

Wendy: I know that they cannot do page-making for the Chinese in the computer. So they have to cut and paste, and it takes time. For every unit they have to do a rough paste-up, and then afterwards, after checking, do a final paste-up. It takes up quite a lot of time. (Interview transcript – 15/11/91)

Language complications I hadn’t anticipated were further revealed in talking with KC Leung, as he explained the project in which he was involved. It was in Chinese, but one of the Chinese course writers produced her work in English, as she couldn’t write Chinese. I had asked for general comments about any difficulties associated with the course because of language.

KC: Well, not for me, because I am a native speaker of Chinese, and I haven’t been out of touch with my mother tongue—I write and read from time to time. For some authors, I believe, they have problems, because although they are Chinese speakers, they do not seem to have been using the language for quite a number of years ...

David: You mean they haven’t been writing much?

KC: Both speaking and writing much purely in Chinese. That is, they’ve been using English and Chinese in a mixed mode. So, to ask them to sit down and write something in 100 per cent Chinese is quite difficult, because they will be lost for technical expressions. But for this Mrs Lo, there was no problem, she was very good: Cindy Lee OK, Mandy Au, I don’t know, and this Fung Ping Ng can’t write at all in Chinese. This is another problem area—the manuscripts that we get from her are in English, so we have to do a translation afterwards—another problem. (Interview transcript 25/10/90)

The language issue also arose in the next interview. KC prided himself on his knowledge and skill with Chinese, and was somewhat troubled about the abilities of his colleagues. Part of the problem, he suspected, was that the writers had obtained their qualifications in English, and this was affecting their ability to write about their subject in Chinese.
Well, I think basically there shouldn’t be anything wrong because we are all Chinese speakers, but I think that there are at least two basic reasons why these people are not doing a good job. First of all, the material, that is the subject matter was, I suspect, how shall I put it, it was somehow put down or somehow digested by these people in the English medium. So they had got their training and got their material down in English, or in the sort of English that they could master. So it was somehow a sort of translation process, whether they were aware of it or not. You see, knowingly or unknowingly, they somehow translated everything in the English medium into the Chinese medium, so the outcome was of course, understandably not so ideal, as you can imagine, right. So that was the first reason why the Chinese language, the sort of Chinese that you find in this material, doesn’t sound very natural. It doesn’t sound like the sort of Chinese we expect to find in proper Chinese language books and related material, or in the newspaper or magazines, journal articles, things like that. Another reason is, that has something to do with these people’s command of their native tongue, which, I am very sorry to say, is not very commendable.

This tendency in written Chinese carried over to the spoken word, as was mentioned above and became apparent as KC further outlined his recent experiences and exasperation with the linguistic skills of the team. My query had been whether the others were embarrassed about their abilities, or lack of same.

They are not aware of it. Maybe I am too sensitive, but I think that they are suffering from a sort of inarticulation which prevents them from expressing themselves entirely in one language, that is, either entirely in English or entirely in Chinese. So they do a sort of hybrid articulation, a sort of hybrid language—Chinese mixed with English, English mixed with Chinese. This became very apparent at yesterday’s meeting. I mean there was never a sentence uttered in purely one language. ...

Any sentence at all was in both English and Chinese, and that drove me crazy, because I am a sort of linguistic purist. You see, my mother can speak Chinese without any foreign words added into it. My son can speak Chinese fluently, without any foreign words imported. I can do it, my father can do it. Why can’t they do it? Because they have been educated in the English tradition, I don’t know. Anyway, none of these authors and none of the other people related to the programme ever convinced me that they could produce a decent piece of Chinese writing.

But the effect on them, of you fixing their Chinese, that wasn’t an embarrassment to them?

They are not aware of it.

So what happens when you give back a draft, and you’ve changed a lot of their Chinese? They’re not upset or offended at all?
KC  No, no, because they thought ...
David They accept your expertise or they don’t appreciate their own weakness, or what?

KC I think that they accepted my expertise, as you put it—they wouldn’t look at it as their weakness. They think their Chinese is OK.

My personal conclusion was that the other members of the team must view KC as something of an authority on Chinese, a view disputed by KC.

KC They wouldn’t look at it like that, they would take my marking as a sort of improvement. I mean they wouldn’t consider themselves unable to write well in the Chinese language. They are not aware of their inarticulation.

David Would you say that’s generally true of a lot of Hong Kong people, academics even?

KC Yes, especially among academics. I don’t know, I think it’s not safe to say that, but I think it can be safely said about the [institutional department] people I have come into contact with, most of them I would say. And that also accounted for the length of the meeting, because everything took so long to be expressed. I mean you and I, if we talk in English for half an hour, we would have said quite a lot. But you see, everything had to be uttered like that, half-way.

David So, a lot was said, but not a lot accomplished?

KC Right. (Interview transcript 7/2/91)

My initial thoughts about language as an issue were thus somewhat turned on their head through the realisation that, for these instructional designers, the development of distance education materials was just as problematic, if not more so, working in Chinese with Chinese course writers. Language thus, for these three instructional designers, introduced an extra level of complexity with which they had to cope and to which they had to adapt their ways of working.

Conclusion

This chapter has thus teased out the major issues that arose in the participants’ projects, as they strove to produce quality distance education materials. Some, but not all, of these issues have direct relevance and connection to elements of chaos theory as presented in Chapter 2.
In particular, Chapter 6 has traced how, in chaos terms, an instructional designer becomes an attractor in the system of course development in distance education. Further, the exploration of the role has sought to reveal how the attractor keeps the system at the turbulent and potentially creative edge of chaos. In particular, teaching and learning strategies, explicitly revealed in activities within course materials, have the potential to bring the system through a state of bifurcation to a new state of order.

The connections between the revealed roles of the instructional designers and chaos theory will be further explored in the final chapter. Before that, though, comes a chapter dealing with the participants’ reflections on their professional role.
Chapter 7

Reflecting on the Practice of Instructional Design in DE: Order and Chaos

... when we reject the traditional view of professional knowledge, recognizing that practitioners may become reflective practitioners in situations of uncertainty, instability, uniqueness, and conflict, we have recast the relationship between research and practice. For on this perspective, research is an activity of practitioners.

Schön, 1983, p. 308

Introduction

As well as describing what was happening in their projects, each participant also spent time in the interviews reflecting on various aspects of their role. Sometimes prompted, but often simply arising as part of our discussions, these reflections provide an additional viewpoint or focus on the reality of instructional design in distance education.

As with the previous chapter, the discussion is broken into separate issues, not because these were separately addressed but these are identifiable within the interview transcripts and written communication. Again, the quotations from the transcripts are quite extensive, preserving the nature and full context of the discussion.

Teaching and learning

The specific applications of teaching and learning were addressed in the previous chapter under the heading of the giving and taking of advice. In that discussion, the outcome of the instructional designers’ basic teaching and learning strategies were explored in the way in which they gave advice on such strategies for their chosen exemplar courses. Here we move on to more reflective comments concerned with their basic beliefs about teaching and learning within distance education.

Marilyn Wu had firm opinions concerning the importance of this issue, perceiving it as the heart of the work of an instructional designer—it is what
instructional design is all about. Her aim was thus not to tell others how to teach, but to convince them to examine teaching and learning processes. Her perception of how she should function was that of an attractor, influencing rather than prescribing.

Marilyn ID is concerned with teaching and learning. This is what I feel. I feel that IDs are people who assist authors to make teaching and learning more effective. We examine teaching and learning processes and, based on a reservoir of skills, knowledge and theory, we have to convince our clients to adapt these strategies, integrate them into their teaching and make them aware of the learning issues of the learners. I always see that we cannot tell an author how to teach, we can only make them aware of all possible instructional strategies. Having digested these strategies, the author will be more able to choose, integrate and apply them in their teaching. My philosophy is that each discipline has its own methodology and as IDs it will be very dangerous to be rigid and dominating. (Letter – 7/8/91)

The issue of advice was one in which Marilyn was keenly interested, prompting her to send me extensive written notes on her experience and ideas. The related issue of academic freedom was strongly linked to the problems of advice and how it should or shouldn't be handled. That is, Marilyn perceived that her role was that of an adviser or consultant, not someone who told academic staff what to teach or how to teach. It was simply a matter of making relevant suggestions which may or may not be acted upon.

As experience grows, you know where and how you can contribute, and when and how you should stop, so that academic staff are not threatened and you don’t jeopardise their academic freedom. At times, we really have to ask whether we are intruding into their academic freedom or not. I suppose if we are telling authors what to teach, we are intruding into their territory.

At times, even telling them 'how to teach' is also intimidating. My policy is that I only make suggestions, very often written suggestions. I feel that if we talk to our authors face-to-face they sometimes do not have all the patience. Having comments on paper means they feel less embarrassed. If they don’t want to take your advice they do not have to defend themselves (although many do explain why and I take their points: after all, we are not the subject experts, and they have more accurate academic orientations).

... Normally I like to discuss writing style and tone, use of readings, etc. with authors. But I find that I can't as most academic staff go straight to writing before any meetings are held. ... My normal practice is to review the materials and then put down my suggestions on paper. ... I feel that IDs are very often staff developers. We cannot change our authors in a short span of time, we just sow seeds and hopefully they will grow and mature.
Marilyn was also happy to supply examples of her advice not being taken, conceding that the instructional designer may not have the right slant on the learning requirements of the students. Equally, she also had the satisfaction of having her suggestions accepted and put into effect.

... I have an experience that I asked one of the engineering unit authors to provide an activity for a table which I felt would arouse student interest and make them aware of the issue of importance of studying agricultural transportation. But I was turned down because the author felt that it was not the orientation of the unit and he felt that he preferred to use student energies on some other activities. I agreed with him, but this is just to illustrate how at times we could be wrong to impose our thoughts on our clients. In another instance, I suggested to him that he might want to give more practice to the students to demonstrate the differences between the various definitions ... He agreed with me and in our next meeting he gave me an elaboration of the examples. I guess this is the area from which an ID will get the most job satisfaction.

Another example is a unit on [geography]. The author gave the students a lot of tables and figures to examine but no activities. I suggested to this author that without activities the students will tend to just memorise the facts and that students would appreciate some interactivity. He took my point and from that time on each of his modules contained very, very stimulating exercises with feedback which he didn’t do in the unit he wrote last time. I remember at the beginning of our process he kept on saying that he was very busy and would like to have the unit out of his way as soon as possible. Isn’t it rewarding to have authors who take your advice and can take off on their wings? (Letter and notes – 7/8/91)

Thus Marilyn obviously found significant rewards in her role, particularly in the growth and development of skills in those with whom she worked, seeing this as a measure of her success as well as a personally satisfying achievement.

As Nick Little had described aspects of his project, he had hinted that he took a fairly eclectic approach, with no clearly explicated system imposed on himself or those with whom he developed learning materials. In following up on this, I asked whether, in effect, he took an evolutionary approach, letting the project form its own structure, and allowing order to arise naturally from the given circumstances. These circumstances, as he described them (‘a dog’s breakfast’), were chaotic, requiring an ordered outcome. Quite how this outcome could be achieved depended on context.

Nick The answer to that is yes and no. ... People have different learning styles. Some people like to learn by chaos—you know, they take everything and put it together and get a cognitive whole out of it. Some people, however, can’t cope with that, they need a structure to
work to. Give me that box and I’ll write inside it. OK? Now, depending on who you are working with as an author, they may or may not be in one of those streams. They may be all over the place like a dog’s breakfast, but they can somehow get it together, or they may need a structure to work to. What I think is a good idea is that it’s easier to manipulate something than it is to create it from zero.

So I believe it’s better to give someone a structure, from which you then give them the confidence and the ability to manipulate that structure. I’m not talking an academic structure—I’m talking of a working environment structure or design principles or manifestations of the principles or whatever. You give them a structure in which they can work and then they can manipulate it. So I think it’s good to start-off with a structure but recognising that let’s start with this and see where it takes us. But it’s an evolution; there’s no question it evolves, there’s no question it undergoes change in my experience, and that’s not being on the conveyor belt. On the conveyor belt you have no control. (Interview transcript – 3/3/93)

So, while agreeing on the evolutionary nature of the work, Nick espoused what might be called a contingency perspective, responding to the needs and working style of the others involved in the development process. There was structure, but a flexible one which itself evolved and changed according to demands and circumstances. This was contrasted with the inflexible ‘conveyor belt’ system of which Nick disapproved, because of lack of control. From another perspective, Nick was against the notion of being overly constrained or ordered in his design and development of distance education materials, but rather espoused a situation in which a flexible or more chaotic structure was allowed to flourish and evolve.

We came back to this issue in a slightly different way later, as we discussed instructional design, and the manner in which Nick had come to be an instructional designer. Later, in reflecting on our discussions, he wrote the following concerning his basic belief about instructional design.

Instructional design is about clarity of communication—I practice this on a daily basis in all aspects of my life. (Written notes – 14/10/93)

Given this fundamental position, I was also interested in what tools he used to produce quality learning materials. My question was aimed at revealing what Nick had in his designer’s ‘toolkit.’ In answering the question, Nick alluded to the delicate balance between order and chaos that needs to be achieved in an effective primary classroom. It was the teacher, as attractor, that kept the class at the creative ‘edge of chaos’.
Nick I’ve got some comments. Some of them relate to my background, and some of them relate to my foreground. The background is that I was a secondary teacher—I believe that the best teachers are primary teachers, and that’s a change of attitude for me because I used to look down on them, but now I look up to them because I think that if they don’t have their act together, if they don’t entertain, then the kids will riot. ...

Anyway, I think that there is what I call my upper working class, lower middle class background: that’s significant because I have my feet on the ground; because I’m very sensitive; because I’m enthusiastic; I get excited about things, I’m creative. I think all of those things are dimensions that are important as a background toolkit.

Thus, at a fundamental level, Nick perceived the necessary strengths as being those of an accomplished teacher who maintained the joy and enthusiasm and creativity of an all-round educator. I asked him whether this meant that his approach to being an instructional designer was artistic, rather than scientific, and that he saw a strong affective streak in his role. He agreed, but with conditions.

Nick Yes, yes. But at the same time you’ve got to be meticulous. If you want to operate at the jigsaw level, then you’ve got to be meticulous almost to the point of obsession. Now there’s a fine balance between being obsessive and being well-organised. I like to think of myself as not being obsessive, I think that I’m extremely well-organised in certain things, and I’ve become better organised as time’s gone on. ...

In the foreground, I think you’ve got to learn the art of diplomacy. If you’re not the author, which I’m not, you’ve got to work out a way that you can draw out of the author the things that you believe are ... at the level at which you should be pitching it. Now, and to do that you’ve got to win trust. I believe that the only way that you can genuinely create a feeling, personal document, course of study is for you, as the instructional designer, to have a personal relationship with your author. Now, I don’t mean an intimate sexual one. I mean it’s got to be trusting, warm, friendly, non-threatening. And if you do that, then it just becomes conversation. It doesn’t become work, it becomes conversation, and that conversation can be converted into personal materials, and that personalised feeling genuinely comes through to the student. It isn’t cold hard fact. Now I don’t know what it’s like writing business management material, because I’ve never been involved in that. I’m of the opinion that there is no academic discipline that can’t benefit from a personality.

Nick’s commitment to a personal approach had led him to publish an article on his fundamental belief in this stance, stressing the ‘people-handling’ skills he perceived were appropriate. At this point in the interview, Nick harked back to the article, renewing his pledge made therein that he was a romantic.
Persisting with the ‘toolkit’ metaphor, I kept the discussion going by focusing on what Nick had to say about his ‘cognitive toolkit.’ He was strongly of the belief that good conversational English was called for in the presentations by distance educators, both in person and writing. Somewhat at odds with his claims for the need for diplomacy, he was critical of what he had observed and read within the distance education community.

\[Nick\] I don’t have a brilliant grasp of the English language, but I have a pretty reasonable one of conversational language. The theorists talk about having a dialogue with the student. Well then, talk in bloody English, don’t talk in text language.

\[David\] Does that mean—I might be coming in too soon—that you don’t have much sympathy with much of the literature in distance education or instructional design?

\[Nick\] I don’t have a lot of respect for the way it is presented—not necessarily the ideas, but the way the ideas are presented. I mean, you go off to a conference and you see the way some of those people deliver their papers; they stand up and bloody well read them, for God’s sake. How dare they! I can read at home, I don’t need to hear you read. Come and give me an experience, show me your personality, show me the dimensions and levels of your enthusiasm and your commitment to this topic, whatever it is. Don’t read it to me. And I’m saying, you pick up an instructional design text and it’s written like a bloody novel, God, that’s just not on, that’s stupid. You’ve got to practise what you preach, that’s what I’m saying.

\[David\] So have you come across good DE/ID literature that has informed you?

\[Nick\] Oh yeah, you can read some of that stuff and get something out of it, of course. But I still think there are people out there, certainly at the lower end of instructional design, that is at the younger end, meaning that they’re less experienced, who want to be shown some ways. Like I can sit here and tell you how to handball a football, but until I give you a football you don’t know if you can do it. What I can do is help you by showing you. I can talk to you about it, I can show you and then I can get you to do it. ‘Hear and you forget, see and you remember, do and you understand.’ It’s that rule. And so I think much of our literature in distance education is written because that’s the game that us academics are in and we’re a little bit trapped in it, and I’d like to breach some of the boundaries of that. ...
tangent, without clearly establishing an answer to my query. I had commented that nothing that Nick had said to me even hinted that he used or was informed by such approaches.

*Nick* Well, I’m very pragmatic—I don’t know if pragmatic is the right word—I’m very practical, I’m on the ground. I’m at the workface of applied instructional design. Now interestingly in my own career I’m drifting towards the theory end of instructional design, but I reckon that’s not a bad way to go, because I’m tired of the workplace because of the chaos that has happened in my past, which we’ve talked a little bit about before.

We did, however, return to the question of backgrounds of instructional designers, picking up again on the notion that a teaching background was almost a ‘must’ for an effective designer.

*Nick* I’m of the opinion that a good instructional designer should have been a teacher, somewhere along the line. ... You talked before about whether there was any evaluation, formative or summative. It’s really interesting as I said to you before, when you’re in the classroom up front, with kids, you’re getting formative evaluation all the time. If you’re not up to it, they’ll let you know, and you have to take that judgement into your next class. You manipulate and mould your behaviours and your attitudes and your method of presentation and so on, so that your next class is better, and so on, that’s where your experience comes in. Hence, when you move in to writing, you try to take those experiences and translate those. It’s really interesting, when we had to go through a job reappraisal story, you had to say what you believed was needed for you to carry out your position. I can’t remember exactly what I said, but something like a degree, and the reason for that is that I think you need that level of cognitive development; at least a Dip Ed, if not further studies in education; and a minimum of three years teaching in a secondary or primary institution. And that’s what I believe you ought to have before you can even pretend to be an instructional designer, because otherwise you just don’t understand the domain in which you work.

That comment of course raised the further question of how one then made the transition from a teacher to an instructional designer. I asked Nick to explain the change, and to outline the difference between the roles of teacher and designer.

*Nick* Well, the pressures are different. I mean you just don’t have to perform on the spot—you’ve got time, and sure that time might be within certain constraints, and sure you have to perform, but what do I have to do that’s different? Well, some people might not be able to write, but then again the role of instructional design might not be to write either. It depends on how you want to conduct your trade. You might be the ideas generator, you might be the identifier of missing links, or the identifier of what needs restructuring, or the identifier of the need for activities; there’s a whole number of ways.
We returned to more general discussion of teaching and learning issues, but finding a focus on evaluation. First, I asked whether things had turned out as planned—in other words, did the students use the materials as they had been designed. By the time of this interview, Nick was dismayed that no formal evaluation of the project had taken place, but was able to offer comments on the evaluation he’d done of the video component.

Nick Students use the tapes in ways that the designers didn’t design. And the implication is there that designers have to think about that ... I mean, that’s the research that I want to go into. So what? They don’t use them in the way that they were designed—so what? I’d like to try to answer that question. Some of them do, the ones who like structure do. That was quite clear; that some people like structure and some people started off using it in the way that it was designed, and then later on they didn’t. They became more complex, and I reckon that’s fantastic. So that’s my experience with the video. The experiences, the comments that I’ve had back from students, and I’ve probably spoken to a number, twenty, over the time, they all say it’s extremely clear and easy to follow and all that, it’s wonderful. But, to be fair, I haven’t done an analysis of how they learn with the materials.

Nick’s comments about how students have differing learning needs as far as structure is concerned prompted me to follow up with questions about flexibility. As usual, he had firm opinions on how learning environments should be structured and applied.

Nick ... one of the things I was talking about [at a distance education conference] was the need to design parallel options in the activities. ... If you are a linear learner, and that’s an assumption in its own right, but if you are a linear learner in the sense that you are going through and you come across an activity, generally what we do is we have one option and then you go on. Now the student may or may not even go down that line [Nick uses diagram on board], and they might just go straight through, not even do the activity. What I’m suggesting is that you need to consider some parallels, and these parallels ought to be in line with different learning theories, approaches and styles, and that there is evidence to suggest that students get pissed off if the style isn’t their style. And the style is often the style of the author. So you’ve got a guide on what the style of the students might be who like it, because it’s likely to be the same style as the author. So what I’m thinking now is that this [should be] catering for different learning styles and hence by definition must be more flexible. If you go within each of those, you can also build that up to be flexible, but of course if they’re in line with the learning styles, one group will be far more flexible than another by mere definition of the different styles, so if you have this more structured, this will be more flexible, on a kind of spectrum. So if you’re asking me am I aiming to design more flexible material the answer is yes, because that is the reality. But I still think you need a structure.
This raised the question of how flexible current learning materials are in
distance education, in terms of providing multiple pathways and alternative
approaches. I ventured that we might not yet be clear on what flexible learning
environments might look like, and how to construct them.

Nick I’m sure we know how to do it, we just haven’t bothered
to try. I think history and expedience is what is holding us back. I
mean, we’re still basing our external materials on the lecture series, on
the lecture mode, and the reality is that the students don’t necessarily
use that style, and in actual fact they don’t even use that style in a
bloody lecture. Why? Because twenty minutes into a lecture they’re
thinking about what they’re going to do next week. Or they’ve already
started to apply the discussion to some other problem, or they’re
thinking about getting into the person that’s next to them or whatever.
They’re off doing other things anyway, even in a structured
environment like our lectures.

So the reality is that they are being flexible—the students are being
flexible all the time anyway. We think that they’ve got to be linear, but
that’s not reality so I don’t think we’re mirroring reality at all. ... it’s a
little like everything can be brought back to football. You know you
have your football and they plan certain strategies ... if a pack forms
there’ll be one at the back and one at the front, ready for the handball
coming straight out over the top of the pack, there should be somebody
there. OK, so you plan those sort of strategies, but, come the day,
you’ve got to be flexible, because if you’re not flexible and you stand
there and find the ball’s not coming out, it’ll never come to you,
because you’ve got to be in a position to be able to change when the
scene happens. You can still plan, but when the scene happens, you’ve
got to be prepared for flexibility.

David The contingency approach?

Nick Yes, and I think we can do it, but I don’t think it’s been
done. ... I don’t think we’re flexible at all, but I think our students are
flexible, they’re far more flexible than us, we just have this belief that
we have to be linear. You can still have that linear structure behind it
all, because some people need that, and when the people go hither and
on get lost, they can come back to a structure and then go out again. So
you need a background structure and framework. (Interview
transcript – 3/3/93)

Thus, Nick believed that linear learning paths did not reflect the reality of a
typical student’s learning environment, and were thus unsuitable, both in the
classroom and in distance education. Rather, the learning materials must reflect
the chaos and uncertainty of daily existence and the variety of paths to
understanding that students take. Flexibility, in terms of coping with the
exigencies of the situation, as well as providing multiple paths through learning
materials, was seen to be the answer to the problem of accommodating the complexity.

Towards the end of my discussions with Wendy Tsui, I asked her whether there were other issues that she’d like to raise concerning giving advice to those preparing and drafting learning materials for students at a distance. In considering teaching and learning perspectives, Wendy raised a point that she had observed with respect to the writing style of some academics which affected the way students perceived the subject structure. Her observation concerned the unwritten messages and assumptions that were apparent in much of the draft material. She saw it as part of her role to assist the author to make those ‘hidden’ statements explicit to the students.

Wendy
Yes, there is one point that I would like to add. In many cases, I feel that I have to read behind the lines.

David
Is that like the idea of a hidden agenda, that there’s something, as you say, that the author ... assumptions that are not written directly into the text?

Wendy
Yes, yes, that is it exactly. When I come across such situations, I will use some questions to guide the authors to say more explicitly what she wants to say about the particular section. And, in most cases, I did make her say it clearly to both ... even to herself, what exactly she was wanting to say.

As Wendy perceived it, the author would often be too familiar with the material, and thus make jumps in logic or assumptions about the material that the students would not necessarily follow. The author was so familiar with the complexities of the subject matter and the ordered paths that could be made through it that the assumptions about this complexity were ignored. It was these unwritten assumptions that needed explicating, and Wendy gave an example to explain what she meant.

Wendy
In most cases I find that, for this particular author, what she missed out was the objective of why she wants the student to study that, what she wants the particular section to lead up to. I can give you an interesting example. That is a particular section in Unit 2 of the subject. That section was about – I have explained that this subject would be supported by another practical subject – and that section was about curriculum models. What she wrote was about a model which would not be practised in [the other subject]. For that model which will be practised, she just had a few lines. So I pointed out to her that you should have done it the other way. Then she stopped for a while, and then said what she wanted to do was to make the student realise that the other model was not so suitable to Hong Kong at the time being. So
that’s why she wrote pages. Well then I told her that you did not make this point clear enough in the text, and you haven’t given students any chance to do what you think of realising it or thinking about it. And so it only gives the student an impression that you are promoting that model.

David So it might leave them confused?

Wendy Yes, so she has achieved some different objectives. But then I find it ... not logical that she did it that way, so I pointed it out to her, and I understand that because I have been working with her for so long. I understand that there must be a thing that she hasn’t put in, so I tried to talk with her and gradually draw out from her what she means. (Interview transcript – 15/11/91)

In this case Wendy thus took on the role of the surrogate student, in an effort to ensure that the meaning of the message in the materials was clear.

Jane Hammersby was concerned with teaching and learning issues, but saw that some of the higher order skills perceived as necessary for their students to develop could be achieved in other ways. That is, some of these skills were the province of the face-to-face sessions that her institution offered to distance students.

Jane I assume that it’s quite different from what you will find in a lot of other institutions in Australia, in as much as it may be one of the reasons why we can get away with having so largely print based materials, and maybe a relative lack of interaction. We don’t have to bend over backwards always to try and find some appropriate method for students to be able to demonstrate slightly more complex skills like counselling or interviewing or group based skills, because we can always have these tutorials or study schools. And in fact, I don’t know whether it’s being strictly adhered to, I think from what I’ve heard it might have slipped by the way, but we’re supposed to have an element of personalised interaction with students in every unit of study. So this takes place in tutorials and study schools. (Interview transcript – 28/2/92)

The instructional designers thus perceived their role as both initially influencing, then providing feedback and guidance on the teaching and learning environments created in the distance education materials. This was a personal, detailed process which partly depended on establishing a good working relationship with the writer of the course. It was also contingent on the context of course development, making the need for flexibility paramount for the participants. The success of their work depended on their ability to influence the system in a creative manner.
Instructional designers and discipline expertise

A sub-issue which arose from a consideration of advice on teaching and learning was the question of whether or not it was perceived as advantageous for the instructional designer to have a measure of expertise in the subject being developed. This has already been hinted at earlier, for example in Wendy’s contribution to the education course. It was also an issue for the course YL Cheung was working on, with his writing of most of the activities.

I specifically asked Nick Little about the relevance of designing instruction within his own area of expertise. It was an area about which, as usual, he had quite firm opinion.

Nick
Yes, I do have feelings about it, I don’t think it’s relevant at all. I think in actual fact it’s in one’s advantage to have only a small understanding of the topic. If you were to say: ‘Hey ..., we want you to do some instructional design work on neuro-physiology.’ OK, I know sweet bugger all about it, but what the good thing about an instructional designer, and this is a quote from Carole: ‘You ask questions that I don’t think to ask’; because it’s almost like ‘out of the mouths of babes’.

David
You’re asking the dumb questions that in reality are the fundamental ones.

Nick
Got it. And I think there’s a distinct disadvantage in being too close, academic content wise, to the project. (Interview transcript – 3/3/93)

Felicity Simmons had a rather optimistic view of her role as a non-expert in content who is nevertheless able to write or at least suggest relevant activities within course materials. I had asked whether there was a tension is her adopting this role for a subject in which she was not expert.

Felicity
Well I think that they always should be checked by the writer. It depends very much on the writer’s skills themselves. If they are a good teacher then they will write themselves as they go along. If the activities are appropriate ... somebody who is [writing but hadn’t] thought of them ... might quite welcome suggestions ... they could obviously be refined to fit.

David
Do you surprise yourself with what you are able to do at times with regard to activities.

Felicity
Well certainly with the unit I did with [another course] recently which was a module on information systems, the management of information systems. I was asked to go through a masters level unit which had no activities at all, it had some questions, it was based on a
book, a text book. Basically, I went through and suggested activities all the way through. I didn’t know the situation of the students well enough really to know that if what I was suggesting would be OK, but I wrote them anyway and went back to the writer and said ‘Is this OK and is this appropriate?’ I seem to be doing fine. So I think you always can as long as you can understand the basic text ... then I can suggest what the activities should be.

David  You must be quite pleased.

Felicity  Well, I think obviously, if you are working at a level which is above you, if for example I was doing a PhD level something or other, then it would mean that I would have to go and read all the books and understand all the books necessary before I could write activities, but I think one can do that.

David  And there are some types or sorts of reflective activities for which you wouldn’t need to be too expert in anyway?

Felicity  Yes, I would suggest that you could always do things like put in questions, for example if you were dealing with a maths subject that you knew nothing and couldn’t hope to understand equations there, you could always suggest things like how would this equation be used in practice. If it is a general enough question you can get away with it, I would think. But you never know really whether that question is going to be a suitable one or it is the best. (Interview transcript – 6/10/92)

The matter of discipline expertise was thus one of some complexity, but generally the instructional designers believed that they could work effectively in a discipline in which they had no experience. Their skills were thus more generic in nature, more to do with structure and process than content. Their work was, as mentioned in the previous section, to influence teaching and learning environments in a flexible way that encouraged the development of creative solutions to course design and development problems.

Metaphors

As an issue in the interviews and discussions I had with instructional designers in distance education, the use of metaphor arose in two senses. First, it arose without prompting in the conversations, as the participants used metaphor to describe situations or the role they took in a given situation. Secondly, I raised the issue of metaphor specifically, to gauge their response to and feelings about written contributions on metaphor that have appeared in the distance education literature.
In forming this discussion, there is of course a rather fuzzy line between what might be construed as metaphor and what might strictly be interpreted as analogy. Here a quite liberal interpretation is used, with some somewhat analogous concepts being linked to or considered under a broadly interpreted definition of metaphor.

**Surrogate student**

A quite common metaphor used by the instructional designers in the interviews was that of the ‘surrogate student’, whereby the designer puts themselves into the shoes of a student as they read and respond to drafts of materials. KC Leung put it simply when he explained:

*KC* I put myself in the place of the student from time to time, to see whether the material would be too incomprehensible. *(Interview transcript – 25/10/90)*

As mentioned, as well as instances where the instructional designers themselves alluded to metaphors or specifically introduced them into the interviews, I specifically raised it as a topic to most participants. Thus the idea, for example, of the surrogate student was raised in both ways. Nick responded to my introduction of the metaphor in the following way.

*Nick* Any person who’s in education has to be a surrogate student, because you have to take your hat on and off every time. Every time you are writing you are taking hats on and off, because you’re writing as an academic, but you’re writing to a student. So therefore you should be taking your hat on and off all the time. So the instructional designer as a ‘hat-taker-on-and-offer’, as surrogate student, is no different than any other educator would be doing. *(Interview transcript – 3/3/93)*

Wendy gave a similar view, explaining in what sense she took a student perspective. Her explanation hinted at how her contribution was actually, of course, different from what might be given by a genuine student.

*Wendy* I pay more attention to how will the students understand what was written. I put myself in the students’ position. I look at the structure, I mean the way it is linked together, presented, structured. The sequence, is it developed logically, is it something referred to later in the unit was previously explained, so that the students can really follow on step by step and build up a global picture. *(Interview transcript – 16/7/91)*
So, while taking a student’s position, Wendy examined the materials from an informed educator’s stance, enabling her to comment critically on the draft, in an effort to ensure that the materials had the kind of structure that would, to her mind, encourage and assist learning.

Steve also used a strengthened form of the surrogate student notion. In his initial discussions with the course team, Steve had used a metaphor to clarify with them how he saw his role. Unfortunately he had forgotten the exact phrase he used, but explained the sense of it in the following way.

Steve  
I can’t remember the expression, but it was along the lines of being the educated ignoramus—the instructional designer, the educational developer as ...

David  
A de facto student?

Steve  
Yes, in a sense, but coming at it with all the background knowledge of the environment that goes into the preparation and production of the materials. (Interview transcript—4/5/94)

Steve thus clarified my slight misperception of what he was trying to convey, emphasising that the role was much more than simply taking a student perspective. It could be construed that he saw himself as a critical connoisseur of course materials, whose knowledge and skills could provide valuable feedback to the course team.

**Consultant/staff developer**

This stronger role was also spoken of by Marilyn, who introduced metaphoric notions in her interviews. Marilyn, at one stage, spoke of her role as something of a teaching consultant, offering suggestions and strategies which the writers of the distance education materials would choose to accept or reject.

Marilyn  
We don’t have much power in the sense that we can’t say this is no good, I’ll change it for you ... I respect these authors’ academic freedom; that is, I respect the way that they teach, and what they teach, and how they teach. I see my role as a sort of consultant and make them aware of teaching strategies available in distance education. So whether they choose it or not is up to them. ... we say that instructional designers are responsible for teaching and learning in the instructional areas of the materials, but I don’t think that we have all the authority to say this is no good, and it shouldn’t be going out. (Interview transcript—28/8/91)
This notion was expressed similarly by Marilyn in a later interview, but this time more in a supervisory sense, especially with those who have little or no experience of teaching or distance education.

Marilyn

I enjoy teaching very much, because you can feel the instant responses, and actually I sometimes see instructional design ...could be paralleled to supervision of teacher trainees. ... Instructional designers are actually supervising them, the same as in face to face situations. They supervise teacher trainees to do teaching, so it’s very similar—it’s a parallel concept that I have. (Interview transcript – 28/2/92)

The ‘staff developer’ metaphor was also explicitly introduced by Wendy as she reflected on her interaction with the authors of course materials.

Wendy

But in my experience working as an instructional designer, I do see that in the process, the interaction with the author, we are really actually doing some staff development work. ... I do not like to use the word teach, but actually, in a way I am telling the author some knowledge in education, in instructional design. And I’m sure that the author will be learning through the process. (Interview transcript – 5/11/91)

The ‘all-rounder’

As mentioned, Marilyn quite often used metaphor in an effort to come to grips with her role and the ideas she was trying to express. In an interview conducted in the period between the two quoted above, the need to have a range of expertise and input was explained in the following way.

Marilyn

... you need to be a ‘Jack of all trades.’ ... You see, because each discipline has its own methodology, you need to know something about cognitive engineering, about experiential learning; you have to know about arts subjects. So if you are a competent and experienced ID, you tend to have a lot of theories and a lot of skills behind you, so that anytime you come across a special author, you can draw his strength and also draw your own strength and then they are married to produce a high quality product. (Interview transcript – 31/1/92)

Again, the hint of the consultant relationship was there, along with the need to have a range of skills and strategies to offer the author. The sense of partnership is also strong, a pooling of expertise or strengths that combine to enable the development of effective distance education materials.
Nick gave a hint of the ‘Jack of all trades’ metaphor as well, as he explained the variability in the role.

*Nick*  
It depends on how you want to conduct your trade. You might be the ideas generator, you might be the identifier of missing links, or the identifier of what needs restructuring, or the identifier of the need for activities; there’s a whole number of ways.

He had other, more preferred metaphors, though, and went on to outline one with which he felt strong affinity.

*Nick*  
I think instructional design is a little bit like art, and if you want to talk about metaphors, here’s one. You and I will walk up to this and say, do you like that, and you say, yes, and I say the same thing, or I might say something different. The point of it is that everyone has an opinion on art—everybody has an opinion. Everybody thinks they have an opinion on instructional design, and I think that that’s good, because I don’t think there’s any one right way to do anything. But, like all paradoxes, the other side of that coin is that it’s bad, in the sense that everybody has an opinion. So you’ve got to listen through everyone’s opinion and therefore they’ll say it’s easy to be cynical; and when the product’s done they’ll say it could have been done better and so on. There’s always a down side. So there’s a plus side in that you can grab lots of ideas: there’s no right way; anybody can do it; they have the right approaches, but whenever you produce something, there’s always going to be a complaint. Someone’s got another opinion about it, because it’s art. I believe that to be an instructional designer you have to be an artist. *(Interview transcript – 3/3/93)*

Steve reflected on the way that he had to adapt his role as instructional designer to the situation at hand by introducing a further metaphor to our discussion.

*Steve*  
... I feel like I’m a real chameleon as an instructional designer, educational developer. I feel like you adapt to what it is you have got in front of you. ... I don’t get much joy out of the theory of distance education and what got me into this in the first place was I had no attraction to that as such, distance education doesn’t excite me as a means of teaching. There’s just a demand for it, there’s a need for it, so you do it and you do as best you can so therefore you reflect on it and see what works and what doesn’t work and what’s best. But I come to it from that very pragmatic point of view, that its there and it needs to be done ... *(Interview transcript – 4/5/94)*

This collection of metaphors—the ‘Jack of all trades’, the ideas generator, the artist, the chameleon—all point to the need for the instructional designer to be keenly aware of context, and to be prepared for the complexity and turbulence of practice. The ‘all rounder’, as an attractor, has to use the contextual
complexities as stimuli for the transformation to ordered outcomes for the distance education projects.
Amicable guerrilla

A particularly striking metaphor that had been introduced into the literature was that of the ‘amicable guerrilla’, and was raised in the interview with Steve.

*Steve* The amicable guerrilla is probably a good one in the description of the [business degree] stuff and ...

*David* They needed to be won over?

*Steve* Yes, and you’re a hard person to pin down ... I guess this handout that I’m preparing on the standard features is a compensation for the inadequacy of that metaphor, I suppose. You know, the amicable guerrilla does not leave evidence behind, whereas there is a recognition you do have to drop some signposts around to help people. The reality is that in preparing stuff for print you’ve got a formality to follow. *(Interview transcript – 4/5/94)*

So, Steve modified his support of the notion, by noting one of its deficiencies. Thus, the guerrilla metaphor was not one that found strong resonance with the participants, as Nick exemplified in his comments.

*Nick* The amicable guerrilla I don’t like because I don’t believe that although that may be a role that an instructional designer takes at the beginning of a project, it’s certainly not their role throughout the project. In fact I think that the instructional designer’s role should vary throughout the project with an individual author. I intimated before fairly strongly that one’s role changes as you go on.

*David* Is there an indication that there is almost something underhand if you have to be a guerrilla?

*Nick* Yeah, it’s deceitful and in a way, to be honest I had to pretend to be something I wasn’t at the beginning in order to get what I wanted. I had to be, not deceitful, but slightly surreptitious to get what I thought that I wanted. But no, I don’t like the connotation. I think that it’s distasteful. *(Interview transcript – 3/3/93)*

Transformer

When prompted to give some general reflections on the notions and contribution of metaphors to his role, Steve first appealed to one that has more recently been largely forgotten in the literature. I asked for general comments on his views of metaphors and their contribution, along with his views of job titles such as instructional designer or educational developer.

*Steve* Yes, we were talking about how I’d said I’d been attracted to the notion of the transformer. [It] was one that had resonated most
sympathetically with me where I had been working previously, especially in relation to the aquaculture programme and most of the work I did was more of that nature as of two years ago ... In the same way I think the title educational developer is the one I prefer now. I think it certainly reflects ... I think I probably would have preferred it a few years ago as well ... it reflects a broader nature of what I do— instructional design is only an aspect of my work. (Interview transcript – 4/5/94)

Interestingly, Marilyn Wu mentioned that at one stage her head of department had once ‘accused’ her of following the transformer model. She had been a little piqued by the suggestion, feeling that there was more substance to her role than simply transforming written content into learning materials.

Limitations

The participants thus found some measure of usefulness within the range of metaphors with which the role of instructional designer was equated, but were by no means universally supportive of their use and potential contribution. Nick Little outlined some of the limitations thus:

Nick Like any teaching tool, a metaphor is a tool, and if it helps you to understand the role of something, then that’s fine. So I’m not opposed to the role of metaphor, in fact quite the contrary, but it doesn’t mean that it has to apply necessarily to you or that one metaphor is sufficient. I mean when you argue by analogy, there’s always a limit to where the analogy breaks down, and I think it’s the same with metaphors. It’s OK to give you a handle, as something to start discussion from, but as soon as you start exploring that and exploring the metaphor a bit more, you find it breaks down, or it melds into another metaphor. So yes it is helpful to get started and so on, but there are limits.

For example, I say here [in a journal article] that the distance educator has to be an educationist, a psychologist, a politician of sorts, a gregarian, an administrator, an adventurer and an individual in order to survive. Now these are my own, and I understand that there are names or descriptive terms that can be given. (Interview transcript – 3/3/93)

Felicity was even more circumspect than the others on the possible contribution of metaphors to informed discussion of the role of instructional designers in distance education. Her insightful comments add a mildly dissenting perspective to the possible value of analysing the role in terms of metaphors and analogy. When asked whether she found metaphors helpful, she responded:
Felicity  I don’t. ... I met it first at an ASPESA forum and I wasn’t quite sure why I found it uninteresting, but I think now, probably having read a bit more about how people are thinking of these metaphors ... The problem is if you attach a metaphor to your job and try and express what your job is using a metaphor, that’s just your perspective. The analysis of metaphor, the use of metaphor in language, is to try and find out what the commonalities of thinking are within a group, as far as I understand. I might be wrong.

Therefore, to me, when you ask somebody what metaphor they would use in relation to their job, they are really describing their personality or their personal characteristics in relation to a group of other people that they work with, and I don’t think that the analysis of that metaphor is quite the same as in analysing a metaphor which is used as a commonality. Like, for example, ‘Open Learning’ is something we use, but maybe we have a similar understanding of its concept and maybe we don’t; and that to me is an interesting analysis and more interesting than asking people to use words to describe individually what they do.

Despite this demolition of the usefulness of metaphors in increasing our understanding of the role of instructional designer, I pressed on in the interview with the notion, citing the seemingly well-received and intrinsically appealing metaphor of ‘joint venturer’ as one worthy of attention.

Felicity  But that’s the problem you see—you can’t. I mean you can only lay on top of those sorts of terms your own analysis of reasons; and you could say, for example, that it is obvious the job is a joint venture and has to be. It’s dependent on all sorts of other people doing different bits and pieces, and the only way you will get to the completion of the task is if you can work with other people and encourage them to work with you. Therefore, a very nature of the job is a group enterprise. I would see it that way, and I would say you couldn’t deny it. There may of course be educational developers who take materials and then go and lock themselves in a room, it’s possible. (Interview transcript – 15/12/92)

The metaphors as discussed thus emerged as of limited use to at least some of the participants. Nevertheless, they provided stimulus for consideration of the nature of the role of instructional designer, with most of the participants introducing their own metaphors to the discussion. Interestingly, these metaphors, such as Marilyn’s ‘Jack of all trades’, Nick’s ‘ideas generator’ and Steve’s ‘chameleon’, have clear sympathy with the notion of an attractor within the course development system. Each gives the impression of something influencing a system, rather than something determining the process.
Conclusion

So, what became clear as the instructional designers reflected on their role was that they saw the need to be flexible in their work. The attitudes they exhibited displayed an open systems orientation, one ready to adapt to the exigencies of each project and situation, in terms of the demands of the subject, the personality and working style of those with whom they worked, and the perceived needs of the students. There was virtually no evidence of adherence to a model of instructional design or, more generally, a model of teaching. Rather, they were ready to come to terms with what often turned out to be complex and demanding design and development work, calling on them to display a wide array of skills as they charted their way through a project.
Chapter 8
Towards New Models: Working at the Edge of Chaos

I have a feeling that all this shit links together in some wonderful way
Stu Kauffman, in Lewin (1993, p. 60)

Those who refuse to speculate are traitors to the future
Alfred North Whitehead

Introduction

Links between chaos theory and instructional design were explored in Chapter 3. This final chapter takes these links further, building on the empirical evidence of Chapters 5 to 7, and speculating on how chaos theory might inform instructional designers.

First, the claim is made that the basic underlying assumptions of chaos theory are more closely aligned to reality than those based on Newtonian assumptions. As was earlier noted, we experience an unruly world, one

teeming with variety and a confusing array of complex, interwoven, hungry structures that grow, and grow more complicated, willy nilly, feeding in an open exchange with the world around them. The biosphere is imperialistic and dynamically unstable. ... The macroscopic world is always in process, ... And as we well know, time moves in one direction only. ... We experience a world of timebound dissipative structures, not a world of elegantly predictable mechanical collisions and reversible, symmetric reactions. (Porush, 1991, p. 59)

Further, as was quoted from Toffler, the idea that closed systems approaches can be used to study social phenomena is patently erroneous, in that

Most phenomena of interest to us are ... open systems, exchanging energy or matter (and, one might add, information) with their environment. Surely biological and social systems are open, which means that the attempt to understand them in mechanistic terms is doomed to failure.

This suggests, moreover, that most of reality, instead of being orderly, stable, and equilibrial, is seething and bubbling with change, disorder, and process. (Toffler, 1984, p. xv)
The participants’ attitudes concerning the situations in which they found themselves working align closely with such world views. Most of them, especially the more experienced, stressed that each project they tackled was different.

Steve This unit’s a little different. ... I could pick on other units or programs and I’d have a very different story to tell you. (Interview transcript – 4/5/94)

Not only are projects and people different, but most also acknowledged that there is no one correct instructional design approach.

David So the implication of that is that with every person you work with, or every different project you’re on, you work differently.

Marilyn Yes. ... So there’s no definite route or no definite good or right or wrong way to do instructional design. (Interview transcript – 3/1/92)

Further, the participants often conveyed a sense of complexity, uncertainty and at times confusion—an open system being acted upon by a variety of forces.

KC ... it wasn’t too certain—everything was uncertain, you see ... Everything came all at once, and I had to sort out various things at one go ... (Interview transcript – 25/10/90)

Nick put it most expressively with his previously quoted metaphoric conclusion concerning his role and work.

Nick ... I want to stress that in this role it was like a jigsaw—you had to piece the pieces together, but you had to do the jigsaw over time. And it was like a flux jigsaw, it was changing from day to day. And not only did you have to get the pieces and stick them next to each other, link them up, the colour with the colour and the line with the line, but the jigsaw was forever changing, so that you had to put the pieces into a dynamic situation. (Interview transcript – 3/3/93)

The focus, then, is on complexity and irreversibility—time, moving in one direction, is a key factor, helping to make chaos theory a science of change, or ‘becoming’, rather than a descriptive theory of ‘being’. Such an approach would clearly find resonance with a process like course development—Steve Worboys commented about his project at one stage that ‘it’s in the process of becoming because it’s a new environment’ (Interview transcript – 4/5/94). As explored in Chapter 6, time was a key issue for all the instructional designers, and
influenced the projects in a complex pattern. It was not just a matter of tight deadlines, but also involved the problem of durational expectancies, producing a variety of outcomes, for the designer and the distance education course materials.

One implication of this kind of work environment is the need for flexibility in instructional design. There is a sense of being ready for changes in the environment, an anticipation that, because of the open systems nature of the work, the instructional designer must be ready for anything. As Wendy Tsui commented:

> Wendy If the author is too busy, then it will hamper the progress very much, and we can't have a schedule. Everything is upset. Then it makes the life of an instructional designer very uneasy. We can never anticipate what will happen tomorrow. ... I think that an instructional designer needs to be very flexible, and has to be able to make decisions, rapid decisions ... you have to make rapid decisions as to what to do. (Interview transcript – 5/11/91)

Specific features of chaos theory have also found their parallels in the theory and practice of instructional design and development. Particular prominence has been given in this thesis to the notion of the instructional designer as a chaotic attractor. As a chaotic attractor, the instructional designer acts as a focussing agent, maintaining the system in a state of agitation, endeavouring to find the creative balance between order and chaos.

Some examples of sensitivity to initial conditions have been mentioned in Chapter 3. Others can be identified within the experiences of the instructional designers participating in this research. Little did YL Cheung realise that, when early on he helped the writer by suggesting an activity, he would end up writing almost all of them. The pattern, once started in a small way, became an ongoing and integral component of his course design work with that writer. For Steve, the presence of a belligerent and initially uncommitted member of his development team caused him to adopt a ‘hands off’ approach that had significant, and seemingly positive, outcomes for the development process.

The presence of non-linearity as a feature of the projects is indicated by the quotations given above. Typically, most participants indicated periods of intense activity, such as the long meetings reported by Felicity Simmons, Wendy Tsui and Nick Little, where draft materials were examined and amended ‘on the spot’. As was noted in Chapter 2, the flow of ideas, upon
which much course design work hinges, is clearly non-linear (Weissert, 1991).
At the same time, patterns emerge as projects progress, developing into iterative
processes as subjects are prepared unit by unit or topic by topic. As YL Cheung
commented earlier concerning the way he ended up working on his project;

YL Well, we usually start in this kind of pattern, right. First of all, we would meet ... to discuss what to include. Usually the author will say what he would like to include in the unit. I may have some comments, suggestions in terms of what are the related problems that might be included, what is the purpose of the problems section, what is the logic in the sequence, what about some sort of guideline or outline of the unit. Usually the author will start working on his own producing the first draft. Then, after receiving the first draft, I will look at it and comment on it, make suggestions on changing sequence, clarifications, that kind of thing. (*Interview transcript — 11/4/91*)

This pattern was typical of the way the participants described their work, once they had sorted out the initial problems of getting the course development going. The development became slowly focussed on the iterative steps determined by the number of topics (units, chapters) into which the particular course or subject had been divided.

These iterative processes invariably involved some form of feedback process, wherein the instructional designer would comment or add to drafts produced by a writer. The number of iterations would vary, depending on a number of factors, including the instructional designer’s perception of the quality of the material as well as the ever present pressure of time and scheduling.

The practice of instructional design that emerges from the case studies is thus that of ‘a holistic, interactive, spiralling, and dialectical form’ (You, 1993, p. 26), more in line with a chaos theory approach than a traditional instructional design model.

**Galloping theory**

Chaos theory is a new and emerging science that is in a stage of rapid evolution. This has presented difficulties with respect to the theorising within this thesis, exemplifying the ‘galloping theory’ problem (McWilliam, 1992) discussed in Chapter 4 (see p. 71). The difficulties include the choice, use and meaning of terms, along with determination of which aspects of chaos theory are most useful and/or applicable to my study of instructional designers.
Complexity theory has been briefly discussed in Chapter 2 (see p. 14 and pp. 31-3). It appears to have its origins in Prigogine’s approach to chaos. Brian Arthur, a leader in the application of complexity to economics, acknowledges that it was Prigogine’s suggestion that the economy might be a self-organising system that sparked much of his research (Waldrop, 1992, p. 34). The precise relationship between complexity theory and chaos theory is difficult to articulate, as it is acknowledged that they ‘are chasing each other around in a circle trying to find out if they are the same or different’ (Lewin, 1993, p. 10).

Complexity studies complex adaptive systems, and, similar to the claims of chaos theory, we are told that:

In the natural world such systems included brains, immune systems, ecologies, cells, developing embryos, and ant colonies. In the human world they included cultural and social systems such as political parties or scientific communities. (Waldrop, 1992, p. 145)

It also involves the study of attractors, and, like aspects of chaos theory, is concerned with entropy.

We all grew up learning the Second Law of Thermodynamics, which says that systems tend towards disorder. The Second law is fine as far as it goes, but it turns out to be inadequate as a description of all systems: some systems tend towards order, not disorder, and that’s one of the big discoveries of the science of Complexity.’ (Kauffman, in Lewin, 1993, p. 183)

As introduced in Chapter 2, the idea of the ‘edge of chaos’ is central to complexity, being the balance between order and chaos where a complex adaptive system is at its most adaptive and creative. Further, for reasons that are little understood,

It seems that learning and evolution don’t just pull agents to the edge of chaos; slowly, haltingly, but inexorably, learning and evolution move agents along the edge of chaos in the direction of greater and greater complexity. (Waldrop, 1992, p. 296)

This ability of complex adaptive systems has also been explained thus:

... the crowning achievement was the demonstration that a complex adaptive system ... not only moved toward the edge of chaos but also honed the efficiency of its rules as it went. (Lewin, 1993, p. 55)
This ‘demonstration’ has included successful computer modelling of complex adaptive systems, a remarkable achievement in itself. An example of such a model emerged in 1990, when ecologist Tom Ray,

against all the predictions of the experts and his own expectations ... unleashed evolution in a computer. A simple ancestral ‘organism’—a small, eighty-instruction computer program—reproduced, mutated, and evolved into a diversity of descendants reminiscent of the rainforest ecosystem ... Tom’s adventure has provided a vital bridge between abstract theory of dynamical systems and the real world of nature. (Lewin, 1993, p. 87)

Complexity theory has also been linked to the much misunderstood Gaia hypothesis. This controversial claim was proposed by Jim Lovelock in 1972 to help explain such puzzling questions as how atmospheric stability has been maintained during the period of life on earth during which the Sun’s output has increased 25 per cent.

‘Life, or the biosphere, regulates or maintains the climate and the atmospheric composition as an optimum for itself.’ (Lewin, 1993, p. 114)

Following severe criticism of the notion from sections of the scientific community, Lovelock sought to model the process, doing so successfully with a computer simulation called Daisyworld. As Lovelock explains,

‘I needed to show that the stability emerges from the properties of the system, not from some purposeful guiding hand. Daisyworld does that.’ (Lewin, 1993, p. 116)

Interestingly, Gaia also features strongly in a recent text from a prominent mathematician and chaos theorist, Ralph Abraham. The book, *Chaos, Gaia, Eros* (Abraham, 1994) claims to uncover the ‘three great streams of history’, by introducing

the concept of dynamical historiography, the application of the mathematical theory of dynamical systems, chaos, and bifurcations to the patterns of history. (Abraham, 1994, p. 1)

Eros is used to introduce Erodynamics, a application of chaos theory to human social studies.

Erodynamics ... is the current research frontier of applied chaos theory. It provides the basis for understanding the symbiosis of human
populations and the biosphere, and explores dynamic models for the world economy and the global environment in tightly coupled interaction. (Abraham, 1994, p. 5)

What appears to be emerging in the current literature on chaos and complexity is an effort by some to establish themselves as the leaders in the field. There thus seems to be an element of competitiveness, illustrated by the proliferation of new terms and disputes over the origins of phrases falling into popular or accepted use, such as the ‘edge of chaos’ (Lewin, 1993, p. 56). It is likely to be a few years before researchers in the field begin to use common and well-defined terminology. It is certainly not currently the case, with even the meaning of ‘complexity’ being not clearly established. Despite these difficulties, there is well-founded anticipation that significant findings will emerge from future research:

... how consistent a pattern is there in innovation in complex adaptive systems such as these? ... It is surely significant that, with all these differences of detail—in the biological, cultural, and technological realms—the overall pattern is remarkably similar. It encourages the belief that consistency of pattern is more than mere coincidence or mere analogy. Fundamental dynamics may be at work, making the pattern of innovation in complex adaptive systems predictable to a degree. (Lewin, 1993, pp. 71-2)

A model emerging

So, given the above findings and connections between disparate ideas and approaches, what might a model of instructional design for course designers in distance education look like? What would be its principal assumptions and features?

First, there would be an acceptance of multiple world perspectives, coupled with a celebration of the complexity of the system in which instructional design operates, rather than an attempt to narrow down focus and isolate individual factors. Rejected are traditional design and planning models that stress order, predictability and linear patterns of change. The alternative requires an open systems approach (Chieuw, 1991), one in which forces acting from outside the system are viewed positively, as catalysts for change and the inspiration for new and novel views of crafting learning environments. The system is viewed, not as chaotic in the traditional sense, but one that is complex in the sense of being rich in information that has the potential for enhancing judgement and creativity.
Coupled with Eisner’s notions of educational connoisseurship and criticism, instructional design thus becomes the art and science of crafting effective learning environments.

In celebrating chaos, an instructional design model does not have to become complex in itself. Rather, it is based on simple iterative procedures across a range of scales within the course development system. Connected to this is the consequent ease with which instructional design can become more context dependent, encouraging localised theorising within an overall globalised strategy.

The heart of a chaos model of instructional design is, however, the role of dissipative structures, the self-organising systems which, when far from equilibrium, transform from chaos to order through bifurcation. As was quoted in Chapter 2,

far from equilibrium, new types of structures may originate spontaneously. In far-from-equilibrium conditions we may have transformation from disorder, from thermal chaos, into order. New dynamic states of matter may originate, states that reflect the interaction of a given system with its surroundings. We have called these new structures dissipative structures to emphasize the constructive role of dissipative processes in their formation. (Prigogine and Stengers, 1984, p. 12)

A clear implication of this modelling is that, rather than seeking simplicity, order and equilibrium, the instructional designer should be facilitating precisely the opposite state of affairs. That is, the early stages of design and development should be seeking complexity and disorder, pushing the system far from equilibrium to allow dissipative processes to come into effect and play their creative and constructive roles, pushing the system to a higher level of functioning. The creative forces of a team of developers will be strongest when the environment is free-wheeling and open, not when the team is tied to a tightly-structured, closed system approach to instructional design. As was previously quoted from Doll,

... there must be ... a sense of indecision and indeterminacy ... The ends perceived are not so much ends as beginnings; they represent ends-in-view, or beacons, which act as guides before the curriculum implementation process begins. But once the course develops its own ethos, these ends are themselves part of the transformation; they, too, along with the students, the teacher, the course material, undergo transformation. ... Here curriculum becomes a process of development rather than a body of knowledge to be covered or learned, ends become
beacons guiding this process, and the course itself transforms the indeterminate into the determinate. (Doll, 1987, pp. 19-20)

The instructional designer’s role then becomes one of encouraging an open environment, using accumulated experience and influence to open up possibilities and possible new directions, not close the group down to a set mode of functioning. Returning again to Prigogine and Stengers, the situation is, somewhat surprisingly, much like that operating in certain specialised chemical processes.

... the new constituents, introduced in small quantities, lead to a new set of reactions among the system’s components. This new set of reactions then enters into competition with the system’s previous mode of functioning. If the system is ‘structurally stable’ as far as this intrusion is concerned, the new mode of functioning will be unable to establish itself and the ‘innovators’ will not survive. If, however, the structural fluctuation successfully imposes itself ... the whole system will adopt a new mode of functioning: its activity will be governed by a new ‘syntax’. (Prigogine and Stengers, 1984, pp. 189-90)

In such a scenario, it is partly the instructional designer’s responsibility to encourage the team to overcome the structural stability of the system, to allow ‘new constituents’, which may originate from multiple sources, to influence the design and development processes. The designer thus becomes a self-organising system, with the ability to control ‘both rational and creative processes, knowing when to apply each and varying strategies and tactics as the situation demands’ (Rowland, 1993, p. 86). Further, as a reflective practitioner in complex circumstances, the instructional designer’s decisions are often ‘triggered by features of the practice situation, undertaken on the spot, and immediately linked to action’ (Schön, 1983, p. 308). Their view of the task is that of ‘situated designing’, where ‘unexpected things in the path are not only obstacles to be overcome, but also opportunities for new views on the problem, and can produce new elements for the designer to use in forming the next action’ (Allen, 1988, p. 12). The combined effect of these factors was, as previously quoted, well described by Rowland (1993) as he concluded:

... some level of situated designing, and of reflection-in-action, is apparently necessary for designers. In a sense, reflection-in-action may describe the process of controlling situated actions ... and the mind engaged in both is a self-organizing system. (Rowland, 1993, p. 87)

Although such features are not immediately apparent in all the case studies outlined by the participants, they do feature most strongly in that described by
Steve Worboys. He found himself holding back from imposing structure and process on the team, rather allowing the team to build up its creative forces—his job was to outline possibilities and to let the team find its own solutions. As he explained, part of the job was to give ‘people freedom that they didn’t think they might have had’. It was only after they had thrashed out numerous issues to do with structuring the new course that they came to him to help with translating their ideas into reality. Similarly, Wendy Tsui saw it as part of her role to ‘raise questions and initiate active discussion’ among the team members.

Once the process does move from the initial design to development, patterns begin to form, a feature of all the case studies. These patterns form around the individual parts into which the course of study has been subdivided. It is here that the iterative processes begin, and the contribution of appropriate feedback mechanisms comes to the forefront. Such feedback systems are not mere corrections of mistakes (negative feedback), but the use of imbalance, deviation and error to drive the system into ‘becoming’ an effective learning environment. As argued in Chapter 3, ‘errors are seen as positive stimulants for the kinds of perturbations that create disequilibrium necessary for self-reflection and conceptual restructuring’ (Lebow, 1993, p. 12). Further, as You earlier expounded, the aim is

> to base our ISD models on the positive or deviation-amplifying feedback loop in order to allow the instructional system to exchange information or energy between the system and environment, to initiate appropriate system response, and thus to regulate itself. In this way ISD models can adapt to changes in their internal structures and renew themselves, and thereby survive and continue to function. Positive feedback should be designed into the ISD model in order for the instructional system to continue becoming rather than simply being. (You, 1993, p. 23)

These sentiments have some similarity with the behaviour of complex adaptive systems, in their movement towards and maintenance at the edge of chaos.

> Complex adaptive systems are pattern seekers ... They interact with the environment, ‘learn’ from the experience, and adapt as a result. ... complex adaptive systems encrypt information about their environment, know their environment in some special sense ... (Lewin, 1993, p. 15)

> Numerous examples of patterns of positive feedback loops can be found within the case studies. Typical was the pattern developed by Jane Hammersby with Nicole—despite the occasional clash, in general the cycle of development had
Jane providing positive input and suggestions to Carole, who put them into effect in subsequent drafts of material. YL Cheung combined his skills in preparing activities with those of the course writer to create a series of feedback loops culminating in completed course materials. Nick Little encouraged Carole to take an open, freewheeling approach to her initial drafting of material. The key to subsequent progress, as an outcome to the deficiencies of the drafts, was effective positive feedback and a close interactive partnership in developing the course.

Naturally, not all the deliberations and feedback were positive. A prime example was that of Wendy Tsui, when the strong-minded approach of Mrs Wong blocked out the potential contributions of others, resulting in people leaving the team. It would seem that in this case, Mrs Wong was unable to accommodate an open systems, creative view of course design and development, insisting that her approach was the correct one. Her feedback into the system was essentially of a negative type, with destructive rather than constructive results. Thus, the opportunity was lost to capture the potential benefits of the confluence of multiple perspectives brought to the process of course development.

The matter of scale levels and their interdependence was also of concern to most participants of the study, and needs to be built into a model for the development of distance education materials. The importance of attention to different levels is well illustrated in the differing project outcomes of Nick Little and Felicity Simmons. For Nick, his project came to a premature and abrupt end due to the untimely intervention of institutional authority. It is easy to surmise and be wise in retrospect that he would have been well served to have striven harder to establish a better working relationship with his college’s principal. On the other hand, foreseeing potential problems due to drifting deadlines, Felicity contacted those in control in the medical foundation for their approval.
Felicity The author is extremely happy. Yes she is very pleased to have gone through this process. The [medical foundation] itself, who will be footing the bill, are very concerned because it has taken so long. But I did get in touch at the right moment and make them make a decision between time and quality, and they went for the quality, so that is pretty good. (Interview transcript – 15/12/92)

Different scale levels within the project were thus kept in harmony, and the work was able to progress quite smoothly. The different scale levels within Felicity’s project might be viewed as, first, the institutional concerns between her university and the medical foundation. Then followed the project as a whole, it’s general structure and aims. At a third level came the working relationship between Felicity and Susan, with the next being the drafted materials, their flow and design. At a final level came the fine tuning of the written work, in terms of language and layout. There is strong evidence that Felicity, like other successful instructional designers, gave attention to all levels of the project, showing awareness of the dependency of scale levels. Failure at one level can have significant repercussions, and small problems, through the butterfly effect, can spread uncontrollably throughout the system.

Conclusion

In this thesis, I have relied heavily on the emerging science of chaos to explain much of the work experience of instructional designers in distance education. Chaos theory, along with complexity theory, is the antithesis of traditional reductionist science. Such traditional approaches, in biology for instance,

tell you nothing important about biological form, how form is generated. ... knowing the structure of H2O gives you no clue as to why water goes down a plughole in a vortex. (Lewin, 1993, p. 35)

The contrast of chaos and complexity is that they seek the fundamental rules that underlie complex systems, exposing the common concepts and self-organisation that sustain them, and ‘laying bare the fundamental mechanisms of nature’ (Waldrop, 1992, p. 39). The kind of science that chaos pursues is, then, a science of explanation rather than prediction. Prediction is included, but only in the sense of knowing what kinds of systems, under what conditions, lead to evolutionary growth and creativity. It is thus not like aspects of physics, wherein trajectories can be predicted with high precision, but rather more like the sciences of geology and astronomy. In geology, for example, it does not
seem possible to accurately predict earthquakes, but the conditions which lead to them and the processes which take place when they take place are well explained by geological theory and practice.

It is with this sense of prediction that the modelling of instructional design is offered. This thesis has examined some of the issues, and provided examples, that affect the successful design and development of distance education courses. In particular, I have focussed on the key role played by the instructional designer in the process, in an effort to discover what general approaches to the design task are effective. Evidence has been offered that it is not necessarily by striving for order—in fact quite the opposite—during key periods of course development, that leads to creative outcomes. The introduction of uncertainty and turbulence does, in some cases and under some conditions, move the system to a higher level.

The image that has been offered from chaos theory is that of time-bound dissipative structures, interacting with their open environment at far-from-equilibrium conditions, and transforming themselves from disorder to order through bifurcation. The role of strange or chaotic attractors has been highlighted in the process. In complexity terms, the related key phrase is the ‘edge of chaos’, which

brings forth images of being poised in space, tentative, dangerous even, yet full of potential. Like all powerful phrases, the edge of chaos has stuck, and has become iconic for the immanent creativity of complex systems. (Lewin, 1993, pp. 53-4)

Qualitative methods have been used in my research as tools to gather appropriate data for analysis. The underlying assumptions of the methodology are congruent with the basic tenets of chaos theory. The finding of this thesis is that there is empirical evidence of elements of a model based on these concepts for the work of instructional designers in distance education. It is readily acknowledged that such evidence is preliminary rather than conclusive, and the connections between theory and practice relatively tenuous. However, I believe the chaos modelling of educational systems presented here and elsewhere is worth further investigation and theoretical deliberation, in continued efforts to elucidate the role and inform the practice of instructional design in distance education.
Appendix 1

Introductory Letters to Participants

First letter

Subject: Research Project on Instructional Designers

I am writing to you to ask for your help and co-operation in my research. The project is a qualitative study of instructional designers (or, educational developers, course designers or whatever you choose to call us!) in distance education.

The research is towards the award of a Ph.D. from Deakin University, and my supervisor Terry Evans, from Deakin's Institute of Distance Education. Thus far I have tried out the methodology with a couple of instructional designers in Hong Kong, and now wish to expand the work to include about ten participants from Australian institutions.

The basic aim of the research is to examine the work of instructional designers, to find out what they do, why they do it, how they do it and who they're doing it with! That is, I believe that we can come to a clearer understanding of our work by mutual reflection on our practice. To accomplish this end, I would like to work with you for a few months on one of the projects (study modules, subject, etc.) with which you are involved.

My assumption is that, at any time, you are involved in a number of projects developing distance education materials, all at different stages of progress. What I would like to do is to follow the progress of just one of your projects through to its completion. This will be accomplished by a series of interviews at intervals of about a month. Between interviews, I would ask you to maintain a diary, making brief notes of incidents relevant to that particular project as they occur. Depending on our respective locations, the interviews could be in person or by telephone, and will be recorded. You will later be given a transcript of the interview for comment and possible amendment. Other communication will be by letter or fax.

My experience thus far would indicate that your participation would not take up a lot of your time. Further, our interchanges can help both of us as we reflect on the challenging work that we're involved in. Thus I hope that the project will add to our understanding of course design in distance education, especially highlighting the ways that successful designers interact with others in the development process.

Naturally, I can assure you of the usual confidentiality that accompanies involvement in such research as this. Please contact me if you have any specific queries about the project. If you can give me (possibly conditional) acceptance, I'll write to you with further details.
I look forward to hearing from you.
Follow-up letter

To: ...,

Date: ..., 1991

Subject: Research Project on Instructional Designers

Thank you very much for agreeing to take part in the project, and assisting me in my research into instructional designers in distance education. As you no doubt realised from my initial letter, you should not feel like an 'object' of research, but as a meaningful contributor to a growing body of knowledge about the instructional design process.

As mentioned, the core of the project is a qualitative study of the work of a small number of instructional designers, concentrating on one study module that they are currently developing. The methodology will be based on the maintenance of diaries/journals, with interviews based on the diary accounts.

I would like to start your involvement by interviewing you, in order to find out basic information about the study module you have chosen to use in the research, the context in which you work and some brief personal details.

You will then start the diary-keeping, making short notes every time you engage in an activity related to the module. Basically, the notes should say who was involved, when the activity took place, what happened and, if necessary, why it happened that way. A typical entry might look like this:

15/10 Met with author in L111 from 3 to 4:30 pm to go over reviewer's comments. Happy with most changes, except addition of section on Ohm's Law - will be covered in later unit. Set meeting for 23/10 to discuss artwork.

Approximately every four weeks, an interview will take place, based on your diary accounts. Thus I will be asking you to give me a photocopy of the relevant pages of your diary a couple of days before the interview.

During the interview, I will try to get you to reflect on the incidents, in order to take the analysis a little deeper, concentrating more on the 'why' questions. I will record the interview, make a transcript, and give you a copy. You can then make any additions or deletions that you choose, should you feel that the interview doesn't accurately reflect your viewpoint. You should also feel free to add any comments or observations which you believe will aid an understanding of the instructional design process.

Thanks again for your willingness to take part. I look forward to working with you in the project.
Appendix 2

Case Studies

Short case studies

Marilyn Wu

... it was very frustrating for the members of the unit team, because we had been trying to contact the author, and the unit team leader, and he seemed to be saying that he’d be proceeding. But we didn’t get anything. So we were almost at the point of reminding him, saying that if you progress at the present speed, you will need 30 years to complete your unit! (Interview transcript – 31/1/92)

This comment was made by Marilyn Wu as she reported on progress (or, rather, lack of same) in a unit she was helping to develop. It was subsequently dropped, while work continued on the other unit of which we had been charting the development.

Marilyn is an Instructional Designer at an institution that was at the time in the throes of becoming a university. It has a strong distance education component (recognised as a Distance Education Centre by the federal government), including a team of nine instructional designers assisted by education officers, whose task it is to do the more routine tasks of course development.

Although a relatively new staff member, Marilyn had extensive experience in the development of self-instructional materials in a variety of media. Originally from Hong Kong, Marilyn had engaged in postgraduate study in education in the UK, and had spent some years in media and general course development in Hong Kong tertiary institutions before moving to Australia.

At the time of starting the interviews, we were concentrated on two subjects just starting development, Agricultural Materials and Agricultural Engineering. The institution had a relatively structured approach to course development, with an approach strongly informed by Elaboration Theory (Reigeluth, 1983). As such, initial work on the units necessitated the drawing up of ‘blueprints’, based on information contained in departmental ‘unit specifications’ (objectives, synopsis, content weighting, assessment and workload).
Most of the work of the instructional designer was meant to be on the
development of this blueprint (the time specified at 12 hours per unit), with the
assumption that once done, the author could pretty well do the rest without
much intervention or assistance. An Education Officer was assigned to each
project, basically to provide administrative and production backup to the
author. Marilyn, however, expressed some disquiet both about the ‘unofficial
time line’ and the types of support that aren’t provided.

_Marilyn_ ... we don’t provide proof reading or editorial service,
because we assume that the authors are capable of writing good
materials ... I don’t believe this assumption. (*Interview transcript –
28/8/91*)

Another consequence of the assumption about time spent on the instructional
design of the units was that staff were given heavy loads of development work.
As Marilyn expressed:

_Marilyn_ But you know how many units I’m looking after? (*David I
hate to imagine!*) I’m looking after 16 units—plus all the workshops
that I have to run, so it’s absolutely crazy that I’m able to do it. But I
think the instructional design work that I’ve put in is more than
expected here. (*Interview transcript – 28/2/92*)

As far as the projects we were concerned, Marilyn was very happy with one of
the authors, who had a schedule to which he was sticking, while the other had
made little progress. This led to it being ‘taken off the list’, prompting the
comment made at the outset of this case study.

As far as the successful project was concerned, it started with a meeting
between Marilyn, the author and the Education Officer. At the time, Marilyn
expressed some frustration with the conduct of the meeting, as the Education
Officer (a very new member of staff) was concerned with what she perceived as
more trivial administrative concerns, while Marilyn wanted to discuss
substantive teaching and learning issues. Nevertheless, after the meeting they
discussed their relative concerns and established a working pattern:

_Marilyn_ Normally, the author will submit the material either to her
or to me. If the material goes to her first, she brings it up to me and lets
me do the review and critique. And then, after I have commented on it,
she will arrange a meeting and we both will go over to see the author.
Prior to the meeting, usually I will talk to her first, so as to brief her and
tell her what I will be talking about in the meeting. Sometimes she also
spots things that she wants to clarify with the author ... and then we
take the materials over to the author and we discuss them with the author. ... I think that it’s a very personal working style that you have to establish, with a team approach. (*Interview transcript – 6/10/91*)

The working author continued to produce drafts, to which Marilyn responded, mostly concerned with the ways that the materials communicated their message and the style of activities. She was a little concerned that her approach was something of a ‘surface manner critique’, as the content was difficult and complex engineering material for which she had no background. As she commented:

*Marilyn* So, in terms of the content, when it comes to the very last few modules, because of my lack of an engineering background, my input is mainly concentrated on instructional features. I look at the objectives, whether they are of a high level, the activities and whether the feedback is there and whether the feedback answers the activities, that kind of thing.

*David* You feel fairly comfortable with that? It's not too much of a worry?

*Marilyn* On one hand I feel I am quite comfortable with it because I think the author, in the process of writing, did pick up some of the instructional ideas. So I feel he is becoming a more competent author for self-instructional materials. In that respect I am quite comfortable in letting it go. But on the other hand, I think if I am an engineer or have better background about engineering, I should be able to input more comments or ideas. And so in the last few modules, I look at it in a superficial way, and also from a student point of view and see if anything is missing, or any instructional features are not as I expected or consistent with the first few modules. (*Interview transcript – 28/2/92*)

These comments were made towards the end of the subject development, and thus particularly applied to the final few modules of the subject. However, the work was completed and sent off for production and printing, with which Marilyn was not involved.

Other work that Marilyn was involved in at the time included workshops for academics which introduced them to distance education. In answering a question about the aim and content of the workshops, Marilyn commented:

*Marilyn* Basically we have four sessions. One is on preparing your unit blueprint, meaning actually helping them prepare their plan of the unit. And so it's like an overall scheme of work. ... This is a bit threatening to the authors, but once they know what the blueprint is, that it's much simpler, a blueprint is regarded as an operational document. The second session is writing a sample module. The third one is institutional procedures and processes. The fourth one is
institutional support and resources. So the first two are mainly on instructional design and the others are more USQ contacts, telling the unit team leaders how to do copyright, referencing, handing in discs or handing in manuscript in written form, and so on. So, an instructional designer ran the first two, while education officer ran the second two.

... The four sessions are actually sort of awareness training, showing to unit team leaders that we have these procedures and we have all these alternatives and strategies that they can use. So it's more or less an awareness programme, and in terms of the actual writing skills and the use of appropriate teaching strategies I would say that they would pick it up during the interaction with the instructional designers and unit team leaders as they progress with the writing of the materials.

(Interview transcript – 28/2/92)

Marilyn was instrumental in redesigning the workshops to more adequately reflect the processes within the institution, and had received positive feedback on her presentation.

Background and case study details – Marilyn Wu

- Experienced instructional designer and staff developer.
- Setting: Australian dual mode institution with major commitment to distance education.
- Case subject: Agricultural Engineering.
- Period of interviews and correspondence: 28/8/91 to 20/3/92.

Nick Little

... in this role it was like a jigsaw, you had to piece the pieces together, but you had to do the jigsaw over time. And it was like a flux jigsaw, it was changing from day to day. And not only did you have to get the pieces and stick them next to each other, link them up, the colour with the colour and the line with the line, but the jigsaw was forever changing, so that you had to put the pieces into a dynamic situation.

(Interview transcript – 3/3/93)

This was part of Nick Little’s description of the project for which he was instructional designer, as he attempted to describe his role and the complexities of the job. Nick was a ‘lone’ instructional designer, contracted by a College attempting to put together a distance education programme in horticulture.

However, he was also part of a management team overseeing the project, made up of two members from his own college with horticultural experience, and two members of a partner college to the project who had experience in distance education. The day-to-day running, though, was left to Nick.
The particular horticultural subject that Nick discussed was 'Plants and Their Identification'. He worked with a single author, who lectured at the college. Commenting about the beginnings of their relationship, Nick confided:

Nick Interestingly, I was taken aside after Carole was identified, and we were going to start work in the February, and was told that she was very hard to work with, you’ll find that she’s pig-headed and arrogant, dogmatic and so on. I have subsequently learned that she was also taken aside and told the same thing about me! (Interview transcript – 3/3/93)

Nevertheless, Nick and Carole did form a close team, both professionally and personally — they worked very closely on the project, with regularly scheduled meetings with the course development team for verification of decisions and to have draft materials accepted or otherwise. Nick saw the team as a vital part of the overall development:

Nick So the CDT’s role was extremely important, it was important because you went back there and that was your communication link: what have you been up to, how did your advertising go, what did you plan to do for your advertising. Yes, you’ve done that, but what about this? It was a forum for exchange of ideas and job allocation and checking and covering all the bases, because there were hundreds of bases to be covered. There was funding, there was advertising, there was delivery, there was numbers of students, there was industry liaison, then there was the authoring itself, there was the work with the AV people, there was the political side, the money, and that could all be aired in that forum. (Interview transcript – 3/3/93)

After attending a workshop run by Nick and a briefing session, Carole produced the first draft, which was rejected by the course committee:

Nick Carole was invited, and she actually told me later that she was quite upset, that we very gently said that we didn't like it. But she in retrospect herself has said that it was the best thing that ever happened, because she then changed her approach and off she went.

The next presentation, she and I started to work far more intimately at a professional level, and we managed to come up with the first chapter.

... I sent her away to write more in the style to try that, and then I would ask her to send me that material. Then I would go through that material and I would edit it. Then we would come together and I would explain what I had done and why, every single line. I went through every line, every paragraph, every activity, even though I might not have written the activity, I might have said an activity is required here that does such and such. I might not know what the activity is, I didn’t actually academically write it, but indicated there
was a need for this and why, and explained every one of those.

(Interview transcript – 3/3/93)

The first chapter then became an exemplar for the rest, with Nick and Carole following the above pattern of development for subsequent drafts, albeit with less input from Nick over time. Concurrently, Nick was co-ordinating the work of the desk-top publishing and graphics staff for the production of the unit.

Nick What I’m saying is that there was a parallel development; there was the author getting the writing side of it going, on the other side I’m getting the production people to be in line so that we know as soon as the stuff comes from Carole it goes to Jill for entry. She knows the exact style that it’s got to go into. It comes back to me, I then edit it, work it up then come back to Carole and literally sit down side by side and we’d spend hours together going through every line and every page. And that happened in the beginning until I felt confident that Carole could do it on her own. And then my role slowly dissipated and I would then make suggestions rather than do with her, even though I still edited. I mean, I’m a believer that if an instructional designer is doing his role properly, he actually does himself out of a job with that individual. Not saying that there isn’t room for discussion, sure, but hand-holding, you do yourself out of hand-holding. (Interview transcript – 3/3/93)

Video also played a part in this unit, and it presented some interesting logistical problems:

Nick So therefore we had now three components; a theory component, essentially plant forms, and two identification components, one for the spring and one for the autumn, that’s what we called them. How were we going to do this, how were we going to do the practical component? Well, how was it done on campus. Well, there the lecturer takes the class around the garden and shows them and talks to them about the individual plants and relates that to the theory and the culture. Well, how are we going to do that externally? Answer, we do it on video. So therefore this unit, even though we might have started writing in January, could not possibly be completed until one year’s worth of filming, because we filmed at the time that the students on campus were looking at the plants and when was that? When they were in flower. (Interview transcript – 3/3/93)

Over many months, Nick devoted considerable time and energy working closely with Carole in perfecting the study units, line by line and word by word. Once the pattern was established, the work flowed well, and the videos were finished and integrated with the text.

On another level, though, things were not going so well. As is evident from his interviews, Nick is a ‘no nonsense’, open natured person with firm beliefs and
opinions on how things should be done. At management level within the college, concerns were voiced about the time and cost of the project. It was an area over which Nick, regrettably, had little control:

So, what was happening was that I was given responsibility but did not have the power that was needed to control the project. Decisions were made by [the] Principal that were jeopardising and truncating the project. (Written communication – 14/10/93)

Essentially, it appeared that there were radically different expectations for the project from Nick and the college management. Partly as a result, senior management within the college attempted to gain control by first replacing members of the course development team, without notification, and eventually by cutting back the course development. Nick could see the writing on the wall, and accepted the offer of an academic position at another campus of the college. As he explained,

Nick ... when people pull rank and say you will do this or you will not do that, without discussion, then you don’t have any control, and when you don’t have any control you don’t have power, therefore you shouldn’t take responsibility. ... essentially the powers that be just simply did not understand so they said stop — panic set in. They said ‘Stop the project’, and we said ‘We can’t stop the project, it’s going and we’re not going under’. ‘We’re going broke.’ ‘We’re not going broke, because it’s all paper money.’ ‘This has cost 80 thousand dollars and you were only given 90 thousand dollars to produce the whole six units.’ And then there were arguments about what was the original agreement, and you were told to do this and that, and these were the parameters, ... (Interview transcript – 3/3/93)

Thus, certainly from Nick’s point of view, his involvement with the project ended unsatisfactorily. There was even a hint of vicarious pleasure when he revealed that efforts to produce further units after he left had produced virtually nothing. However, as far as the instructional design work and the quality of materials was concerned, he was well satisfied:

Nick ... it was my baby, I worked very hard on it. I believe it’s an excellent project — I think that the material is terrific. (Interview transcript – 3/3/93)

Background and case study details – Nick Little
• Experienced instructional designer.
• Setting: Australian tertiary institution with minor commitment to distance education.
Felicity Simmons

I think that the changes that you suggest will be accepted by a writer if they are suggestions that they would have made themselves if they'd had maybe longer to reflect on the writing. Often a writer gets so immersed in the nitty-gritty that they really need a month to put the materials aside and stand back and then go back to the materials and they probably would have seen the flaws themselves and I see that part of the role of the educational developer to see the materials in the light of the intentions of the writer and to maybe see weaknesses in the material that the writer himself would have noticed at a later date.

(Interview transcript – 6/10/92)

This incisive comment was made by Felicity Simmons as she reflected on her work as an educational developer in an established dual mode university. Felicity is an experienced educator, with post-graduate qualifications, whose interest in distance education had been fuelled in the UK, followed by seven years in New Guinea at the College of External Studies and as a curriculum developer for the Health Department, before taking up her position as an educational developer nearly two years before the project.

The project on which Felicity was working was something of an oddity, both in terms of it being different from the others in this study and for Felicity’s usual work in distance education. In fact, this one was not a standard distance education project: it was the development of a national resource kit for nursing homes, produced by a medical foundation. The foundation had been working on the project for a couple of years, but had been unable to bring it to fruition. They approached Felicity’s university to complete the job, and negotiated a contract (much of which was developed by Felicity) for a relatively rapid completion date.

The work was done in partnership with an expert in the area, Anne, identified by and contracted to the foundation. Felicity’s first task was to examine the drafted materials to ascertain the scope and dimension of the changes that were required. Essentially, there were three main weaknesses she identified. The first was in the nature and quality of the activities within the materials. The second was more complex, in that her reading revealed that the kit seemed to be written for nursing staff, while the majority of staff working in nursing homes are nursing assistants—the distinction between the two is very significant,
especially with respect to the jobs they are and are not permitted to do within a nursing home. The third related weakness was that, within the materials, the discussion was somewhat muddled, in that the discussion with respect to prevention of the medical condition was not clearly differentiated from the management aspect. This is especially significant because of the difference in roles between nurses and nurse assistants—the assistants have a role to play in prevention, but not in management of treatment.

The result of this assessment was a major re-ordering of material, with the management chapters being more clearly identified, and a special chapter for the nurse assistants being added which focussed on prevention. Felicity also started drafting activities, which Anne found to be suitable, and were thus incorporated into the kit. Felicity’s work was somewhat hampered when Anne was away overseas for some weeks. She was given an interim consultant, but tended to do most of the work herself. Once Anne returned, they worked closely and intensively to complete the task. Felicity would drive to the nearby city where Anne worked, and they would spend up to ten hours straight at the computer, going over each section carefully, making changes as they went.

Felicity Well we had got to the point where I had suggested a new prevention chapter—I think I mentioned that in the last interview. So I hadn't actually pulled the text apart and made a prevention chapter, which meant that there had to be all sorts of changes to the other chapters also to balance them out. Since she had come back from England she had gone through that material and made suggestions of places where that didn't work, where my suggestions weren't good enough. So she had actually re-revised my suggestions, although basically she took them on board. So we were going through that refining process. Also I had put activity sections at the end of each chapter, and we went through those together. Throughout the text we were doing minor shuffles around in places. (Interview transcript – 6/10/92)

Thus, although this might be classified as a ‘quick fix-it’ job, Felicity was nevertheless able to make a real and significant contribution to the task. Naturally she was pleased with the outcome, especially with the manner in which the material had become much more accessible under her guiding hand.

Felicity I feel good about the work that I've done is extremely good. Yes, because I think I have made it very much more useful as a resource, as it was intended to be. I think that we discussed earlier on that it isn't a standard course. It is a text that is going to be used as a resource ... So I've interlocked all the different parts of it, cross-referenced all the way through. So that wherever they access the material they can be lead through to other areas about the information
they looked up. Which I think has been different because it was a resource text and not a course. (Interview transcript – 15/12/92)

Background and case study details – Felicity Simmons

- Experienced instructional designer.
- Setting: Australian dual mode institution with strong commitment to distance education.
- Case subject: resource kit for medical association.
- Period of interviews and correspondence: 16/9/92 to 15/12/92.

Wendy Tsui

... it was not resolved in a very satisfactory way. I would say that it was because Mrs Wong was dominating ... She was a course leader, so she has more influence, and she has a rather strong character, and when she forms opinions of others, it's difficult to change her mind. So sometimes it's very difficult to convince her ... at the time, it became very unhappy, people became very unhappy, ... I was not too happy with how it was resolved, because it was resolved not because the team find a consensus to the solution, but because some people became too fed up and become too unhappy, and they dropped out. (Interview transcript – 15/11/91)

These comments were made by Wendy Tsui in her assessment of the origins of the project on which she was working, Child Development. The subject was part of a course in Chinese for those working in pre-primary education. Most of the course materials were being written by staff members of the host department within her tertiary institution in Hong Kong. Although it was a distance education course, her institution was primarily for on-campus students, but the educational technology department for which she worked was involved in the development of self-study materials, for both evening and distance education students.

The person principally responsible for the writing of Child Development was well known to Wendy:

Wendy So I have been working with Mrs Wong for a long time, starting from the very beginning when the course was only in the planning stage. I joined the team at that early stage. We developed together the syllabus, the course scheme, etc. ... Our working styles, what we are strong at and weak at—we know each other very well. (Interview transcript – 16/7/91)
However, the subject had not had a smooth design and development path. Originally, a team was formed, and two other staff members were due to write Child Development. However, the approach they proposed to take was met with stiff opposition from Mrs Wong, the course leader. They had planned what they called a longitudinal style, wherein they would tackle themes such as physical development, language development, cognitive development and social development.

*Wendy* But Mrs Wong objects to this, and said that it is better to look at each stage, dividing the subject into age groups, so as from two years to three years, and look at the children at that age, what their different aspects are. So there was hot debate about which was the better approach. (*Interview transcript – 16/7/91*)

The unfortunate outcome was that the two prospective writers dropped out, leading to the comment made by Wendy at the beginning of this case study. Thus it came to be that Mrs Wong was the only one left to write the subject. As an additional complication, the subject was assigned to a different instructional designer, who was basically unable to cope with Mrs Wong’s style and approach, and thus the project was handed over to Wendy, who had already worked successfully with Mrs Wong.

Further, Child Development was not Mrs Wong’s major strength, and so the only departmental staff member left with expertise, Mrs Medway, was assigned to provide expert review of the materials. Mrs Medway was not able to write the materials herself, as she had no knowledge of Chinese. Normal practice was to have the reviewer assess drafts when they were essentially complete, but because of the language problems and the need to bring in Mrs Medway’s expertise early in drafting, Wendy devised a different way of working. Her solution was to have meetings with Mrs Wong and Mrs Medway, to go carefully over first drafts of the learning materials. This led to lengthy meetings, where the three of them would go through the work, page by page. Such meetings would routinely take three hours, even then often not meeting their objectives as far as progress through the material was concerned. Thus, if it was a morning meeting, the discussions would continue over lunch.

Wendy found that, even though the other two obviously respected each other, Mrs Medway would at times be rather cautious in her criticism of Mrs Wong’s draft material. As a consequence, when she believed it worthwhile and appropriate, Wendy would step in and support Mrs Medway. Generally
though, in the meetings Wendy found herself taking a student perspective, trying to ascertain when the students might not be successfully able to follow the structure and sequencing. In this she was mostly successful, her suggestions for change often being accepted, leading in one case to a change of name for a major section because of a change of focus she proposed.

Coming back to Wendy to check on progress a few weeks after the above discussions, I found that there had been another major change—Wendy had been taken off Child Development, and given another project in some trouble, Skills and Methods 3. Again, she was to work with Mrs Wong, and again it was something of a rescue operation, the subject being very late in development. What seemed to be happening was that Wendy was being used as something of a trouble-shooter. As the person most successful in developing a working relationship with Mrs Wong, she was given the most difficult subjects or brought in when things went wrong. Once Child Development was progressing relatively smoothly, another instructional designer was assigned to the role, and Wendy was put onto an emerging difficult subject, Skills and Methods 3.

The development of the subject was running so late that the decision was made to write Unit 2 before Unit 1 and give it to the students, as they needed it for background information for another subject, Practical Work 2. In this situation, Wendy changed her approach to her role, partly because she had some background qualification in aspects of the subject, so felt able and confident in offering some content expertise to the development.

Not surprisingly, in assessing her role in the design and development of these two subjects, and reflecting on the job of instructional design, Wendy commented that:

Wendy I think that an instructional designer needs to be very flexible, and has to be able to make decisions, rapid decisions. ... you have to decide what to do, for when you receive a draft that came in very late, and then you find lots of problems in it, then you have to make rapid decisions as to what to do. (Interview transcript – 5/11/91)

Background and case study details – Wendy Tsui
- Experienced instructional designer and staff developer.
- Setting: Hong Kong tertiary institution with minor commitment to distance education.
- Case subject: Child Development/Skills and Methods 3.
• Period of interviews and correspondence: 16/7/91 to 15/11/91.

YL Cheung

... we actually don't have time to sit down as a team ... we tried to give him a brief on our objectives, on our students, on our level, and that kind of thing before we actually sent out the materials. We tried to share this with him, but then, in that kind of written notes I don’t think we actually did much except for providing brief information. We actually don’t have time. We haven’t arranged a time for the team of reviewers, authors, [instructional designers] to sit together and talk about it. I sometimes don’t know to what extent we share a common theme and common objectives. (Interview transcript – 11/4/91)

Making the previous comments, YL Cheung was reflecting on the result of time pressures on the team developing Family and Society, particularly the integration of one of the reviewers (the ‘him’ in the quote) into the team. The subject was another in the course being developed for pre-primary educators in which Wendy Tsui was involved.

As with Child Development, this project had a stormy beginning. The course committee had engaged in heated debate over the content and thrust of the syllabus (whether it was too ‘academically sociological’), resulting in the withdrawal of the original writer of the subject. The new author, TS Ho, had no real experience of pre-primary education, and so an internal reviewer of his material was appointed, a part-time academic with appropriate experience. The subject was also to be subject to external review.

Family and Society had originally been planned to be a first year subject, but with the turmoil over the syllabus, the resultant delay meant that it was moved to the second year. The syllabus document with which YL and TS had to work was considered by them to be too sociological, but because of time pressures, they decided to work with and try to give the subject the slant they believed was appropriate, relying on the internal reviewer, Winnie Ng, to verify its suitability for the kindergarten teachers.

The working pattern that subsequently developed was that YL and TS would first meet to discuss the content and style of each unit into which the subject was divided. TS then worked on an initial draft, which YL commented on, gave suggestions and drafted activities. A cycle of redrafting two or three times ensued, after which the unit was sent to Winnie for review. Once her comments
were incorporated, it was sent for outside review. However, the ever-present time constraints on the project meant that there wasn’t time for the outside reviewer’s feedback to be incorporated before the unit was sent to the students. YL did plan, though, for it to be used in the next offering of the subject.

As far as Winnie’s review comments were concerned, it seemed to YL that as she was a junior part-time staff member, she was not being as critical as she might be, and thus he and TS sometimes found her feedback inadequate. Again, time pressure played a part, in that she was often given only a few days to present her response to a draft unit.

Towards the end of the project, though the pattern of working was considered quite successful, YL found that the working relationship was almost too convivial, and that he and TS had become complacent about deadlines.

YL... we've been working together for quite a long time. We've got used to the working habits of each other, so in that sense it's become easier. But then there is ... delay ... with the deadlines. I feel that one of the reasons is that we are in that kind of mood that we have almost completed now, so that we are not so keen on sticking to [the] deadline. So as a matter of fact, for the last chapter, chapter eight, there has been a drag on the deadline and we have only been able to complete the draft two weeks before the date we have to send it out. (Interview transcript – 11/4/91)

Thus, for the final unit of Family and Society, there was no time for Winnie to provide her input, at least for the initial offering of the subject.

Background and case study details – YL Cheung

- Inexperienced instructional designer.
- Setting: Hong Kong tertiary institution with minor commitment to distance education.
- Case subject: Family and Society.
- Period of interviews and correspondence: 26/2/91 to 11/4/92.

KC Leung

Everything was left to the last minute. So we had to rush, and the outcome was understandably of an inferior quality. I was miserably responsible for churning out something so miserable, of such a low quality. (Interview transcript – 7/2/91)
This sad assessment was made by KC Leung of his involvement in the development of Skills and Methods 2, another subject within the pre-primary education course. As a relatively inexperienced instructional designer, KC was faced with quite a complex task in developing the subject. There were four writers, two from within his institution and two contracted from elsewhere, all of whom had no experience of preparing distance education materials. In addition there were the reviewers of the materials. Again, Mrs Wong featured strongly as course leader. Wendy Tsui was to review the materials for their educational approach, at the same time providing backup to KC in his work with the group.

KC  You see, I was also sort of a trainee, so Wendy sort of saw me through at the beginning. (Interview transcript – 25/10/90)

The group worked with a syllabus developed by the course committee and validated by the institution. This is not to say, though, that amendments weren’t made by the subject team, one familiar member in particular:

KC  All along some suggestions were made and then the curriculum was a little bit changed from time to time—some parts were crossed out and new things added. Mrs Wong, the course organiser, had all the say, actually. ... Most of the time she brought up the changes. (Interview transcript – 25/10/90)

However, once the group had met, briefings been given and deadlines established, progress was slow. The first few units were written, to a pattern similar to that followed by Wendy and YL, but then the development schedule started slipping behind month by month. The first of the writers had completed her task, but the other three were finding it difficult to progress. KC met with one of the outside writers, Mrs Lo, who managed to produce a preliminary draft, and tried to help with suggestions over content selection and the preparation of activities. KC was not particularly impressed with the language proficiency of the team members, and surprisingly revealed that one of the writers was unable to write Chinese at all, so that her units were to be translated from English.

Meetings of the group were held, at which Wendy made suggestions that were not particularly welcomed by KC. Even when drafts were eventually forthcoming which KC found quite acceptable, Wendy would be dissatisfied with the outcome. He voiced considerable unhappiness with the situation,
feeling that his background in teaching gave him a more realistic view of the abilities of the students:

KC

She sounded very unhappy about the draft, but she's usually very unhappy with drafts. I mean, she is usually exaggerating, from my point of view ...

Too low level and too few [activities]—usually not enough. I think her dissatisfaction is not very realistically founded. That is, I would imagine in practice the students would benefit from the activities Cindy has in this case already put forward as suggested designs. In other cases, other authors designed those activities which she found rather low level or inadequate or whatever. She would come up with brilliant suggestions which may not be practicable—too high level. This is a certificate level course, and I would say she is doing everything from a very theoretical point of view without any reference to practice. I'm not sure how long she had taught before joining the [institution], but I would say she is totally out of touch with the learning population. (Interview transcript – 26/11/90)

Time pressures forced the materials through the system, with a little modification, a pattern that was followed for the next few units. However, matters became more serious when Mrs Wong stepped in:

KC

Cindy Lee's unit was OK so we thought, but then in the last minute, Mrs Wong told us that she found something seriously wrong with that unit, which we had considered to be perfectly alright. She thought that there was a crisis situation and [KC’s immediate supervisor’s] attention was drawn to that opinion and so she and I met—we had a sort of emergency meeting at which she decided that if I didn't want to work on this Chinese project, I could be released to do something else. I said that might be a good idea, so I sort of gave up working on the project. (Interview transcript – 7/2/91)

Thus KC’s involvement with the subject came to an abrupt and unsatisfying end. As he reflected on his efforts with respect to the design and development of the subject, his summation was as explained at the beginning of this case. Further,

KC

... the heart of the matter was that I didn't quite agree with my colleagues point of view. I sympathised with the author. But I must admit that the whole experience was not very pleasant. I didn't quite like what I was doing, I didn't think that I was very productive, I didn't think that I was doing a meaningful job. (Interview transcript – 7/2/91)

Background and case study details – KC Leung

• Inexperienced instructional designer.
• Setting: Hong Kong tertiary institution with minor commitment to distance education.
• Case subject: Skills and Methods (Pre-primary Education).
• Period of interviews and correspondence: 25/10/90 to 7/2/91.

**Steve Worboys**

It's diverse and all over the place and trying to get any sort of grip on it and focus on it is just that much harder. *(Interview transcript – 4/5/94)*

These were the sentiments of Steve Worboys as he contemplated the progress of a subject with which he was involved. The project was complicated in a number of ways, including the existence of a course team comprising members from three of his university’s multi-campus locations.

Steve was an experienced instructional designer, having worked in distance education for many years, in a small regional college which had recently amalgamated with a larger institution. His work had thus spread to other locations, now that he was part of a course development department with responsibilities right across the university. This particular subject, Organisational Theory, was part of a new business degree. All the other five team members (academics from the business faculty) were from other campuses.

Although the subject had been taught at a distance previously at one of the campuses, the person:

Steve ... who was involved ... in the teaching of this unit has decided that she doesn't like the new environment ... and has indicated that she is retiring at the end of the year and so ... is not being involved with the transition ... So there is a complete break between the old organisational theory unit and the new.... the experience of that person who has been doing it for years is not being included. *(Interview transcript – 4/5/94)*

Early on, Steve perceived that nothing much would happen unless he got the group going, so he contacted the team chair to initiate the first meeting. The meeting was to take place at one of the other campuses, nearly 300 kilometres away. The starting time of 9 a.m. meant that Steve had to make the trip the night before. In some ways, he was happy to put up with the inconvenience:
Steve ... because there was such a large group of people that had to get together and I felt that it was really important that there not be any procedural impediments in the way in terms of times being awkward. If they could ... manage to get together at that delicate beginning stage that was so important. (Interview transcript – 4/5/94)

As it was, there were already enough potential impediments to a smooth course development – there was no syllabus for the subject, none of the team had taught it before, and only two of them had any experience of writing distance education materials. In addition, one who had done some writing was soured by the experience of working with another development unit, and was entering the team with an aggressive and negative stance. As Steve explained it in attending the first meeting:

Steve ... here I was walking in cold in a social sense, if you like, and this chap who didn’t want to be there let me know in no uncertain terms that he didn’t want to be there – it was very forceful, sort of aggressive. (Interview transcript – 4/5/94)

Fortunately, the non-threatening manner adopted by the team chair, combined with Steve’s easy-going approach, soothed him, so that by the end of the three hour meeting he was starting to exhibit the growing enthusiasm becoming apparent in the team. Although Steve gave them a briefing, it was more in the style of opening up possibilities for them, rather than prescribing what they must do. As he described, he ‘played it cool’ in doing the ‘scene setting’, giving general outlines of procedures and due dates, and explaining the background information he had on the potential students and the general course development. The approach worked. In some ways he wasn’t even quite sure how he managed it himself, but he was certainly pleased with the outcome:

Steve If I had to focus on one major thing that I’ve got out of it is ... the importance of focussing on getting group dynamics going. I don’t know how you do that. Part of what you do is by offering your services, by being friendly, hopefully being useful, and responding to their fears and anxieties as best you can. All I know is that in this situation it worked – this time it worked, next time it might be a disaster. But it was interesting being involved with a group where it really worked. It went from this initial meeting of high uncertainty, a large amount of anxiety and some out and out negativity to within two meetings of being a really focussed, committed group of people enjoying each other’s company and that was the task. (Interview transcript – 4/5/94)

There was no great rush to get on with writing the subject. Rather, emphasis was on getting the design right, through regular discussions in meeting. Steve
considered it a major achievement that the group was able to organise weekly two hour meetings of six academics from geographically dispersed campuses.

So, by the end of the first meeting the goodwill was established, and the second meeting was set aside for brainstorming ideas. It worked well, with Steve restraining himself from discouraging them from notions which he considered unworkable. One interesting decision made at this meeting was the commitment of available funds to having the sessions videotaped and transcribed, both for record keeping, and to provide possible material for future research on their group processes in course development. The funds would also cover the cost of the part-time research assistant to transcribe the sessions—her contribution became highly valued:

Steve ... the value of the decision they had to have this outside person come along and record the brainstorming, because she recorded the meeting and then made a synopsis of all the important points and alternatives ... There were wildly different possibilities and plans being made as to how we could use the textbook, and it was valuable having this woman, Toni, record everything so that in the week, then everyone had a copy, and came to the next meeting with the ideas a little more thought-about and in the third session they actually started thrashing out a focussed syllabus ... (Interview transcript – 4/5/94)

Steve found that his role evolved as the project moved along. He was the initiator and co-ordinator at first, but after a while the team as a whole kept things going.

Steve ... at least initially I was very much the one who got it all happening and now they're driving it themselves, in terms of having come up with a plan of how they're developing the syllabus. (Interview transcript – 4/5/94)

The need for Steve to contribute at the meetings also diminished as his role evolved from that of the initiator through to being a reviewer of draft materials. Their brainstorming gave them the opportunity to thrash out ideas and gradually find a focus. All in all, Steve found it a rewarding experience, and believed that the others found it equally so:

Steve They'd never been in a forum like this before, a relatively small group focussed on what it is that they all do, that they all know about, and throwing ideas up about what would be good to pass on to students—to teach on this new unit, with nothing laid on them. You know, they had total open house in terms of what they could do. They really found it professionally exciting and it was quite fun being part of it. (Interview transcript – 4/5/94)
Some months later, the prognosis was still fairly positive, despite the stragglers in the team, as the drafting and re-drafting reached its conclusion.

It’s getting close to the due date for that unit team concerned, and some of them are limping to this particular finishing line. Of the writers in the group I guess 4 have taken good advantage of the series of meetings we have had and taken on board feedback on their drafts and made fairly dramatic improvements. The rest I can just hope get it close to right first up by osmosis, from observing the development in the others’ efforts. (Email communication – 3/8/94)

**Background and case study details – Steve Worboys**

- Experienced instructional designer.
- Setting: Australian dual mode institution with major commitment to distance education.
- Case subject: Organisational Theory.

**Extended case study**

**Jane Hammersby**

As I was working thro’ ch. 11, Nicole came into my office to answer some queries I had. As she saw what I was doing, she said ‘Oh, I’ve completely reworked that chapter.’ This time I told her no. I’ve been telling her since before Christmas she can’t keep making changes on disc once it’s on our network.

Her response was that our deadlines don’t suit her – to which I said her deadlines don’t suit us. She warned that she would make the changes anyway once she received the draft to proof. Again I emphasised all changes had to be onto hard copy. (Diary entry – 3/3/92)

This incident took place towards the end of what was largely a successful and reasonably smooth project involving an instructional designer working with a member of the lecturing staff in the development of distance education course materials.

**Getting started**

The project had started some nine months earlier. The instructional designer, Jane, was something of an ‘old hand’, having been with the institution for at least eight years, although this was her first project after returning from
maternity leave. The writer, Nicole, however, was quite new, both to the institution and to the writing of materials (although her appointment, at Senior Lecturer, was by no means a junior one). At the time of the first meeting, Jane didn’t anticipate that the lack of experience would be a particular problem:

First meeting with author in her office (Social Wk. Dpt.). Outlined role of [Jane’s department]—instructional designer vs. editor etc. Introduction to principles involved in writing a unit. Author is very much starting from scratch—all her own work, & doesn’t believe there’s a good text for students. She hasn’t written external materials before, but her (internal) unit outline is well structured & she has kept full lecture notes throughout semester. ... Nice lady — good ambience achieved (despite my whingeing baby in attendance!). (Diary entry — 26/6/91)

Following the meeting, Jane wrote Nicole a memo, outlining expectations for the next meeting and providing some samples of unit materials from other courses. During the ten days till the next meeting, Jane spent time in the library checking references and familiarising herself with the subject, as well as contacting Nicole to check if the sample materials had arrived (they had, but were unopened at the time). The need for timetabling a regular weekly half day to meet was expressed to Nicole. As well, at the time Jane noted concerning Nicole; ‘I think she doesn’t appreciate the difference between lecturing and writing for off-campus students.’ This prompted her to prepare some guidelines on the conversion of lecture notes, and gave them to Nicole in advance of the next meeting.

The meeting was quite long and wide-ranging. Some of Nicole’s concerns were about the practicalities of offering the unit (the role of tutorials, etc.), but the discussion also included consideration of Social Work as a profession, and how it related to other professions. Jane was worried that the exemplar materials were too ‘text-based’, so after the meeting searched for more appropriate ones. These materials, along with a memo outlining their next tasks, were then sent to Nicole. To help getting started with the writing task, Jane spent time making written comments and suggestions in the margins of Nicole’s introductory lecture notes, to ease the conversion to off-campus study materials.

What sort of picture emerges from this beginning of the project? First, it is not so much that there is a sense of chaos (despite the presence of Jane’s young son!), in the literal meaning of the word. Rather, what comes through is the flexible nature of Jane’s approach to her role. She is attentive to Nicole’s strengths and
weaknesses, seeking ways to assist Nicole appreciate the perceived requirements of a good quality distance education materials. The approach is a wide ranging one, getting a ‘feel’ for who Nicole is, and what the essence of the subject under development might be. At this stage the deliberations have the characteristics of an open system, widely exploratory and ready to react to the needs of the writer, the subject, the students and the institution.

**Drafting materials**
The next meeting was postponed by Nicole for a week, during which time Jane read the recommended text, which she considered useful. At the meeting, the major focus was on producing a writing schedule, and Nicole handed over a draft of the first chapter. Reading it later, Jane found it very confused, and inferred that Nicole may have just rushed some writing in order to have something to hand over in the meeting. Her subsequent memo to Nicole included the suggestion that ‘this may not have been the best time for me to see it’.

Another incomplete version of the first chapter was handed over at the next meeting, with Nicole promising to finish it over the next weekend. Textbook choice, as well as reconfirmation of the writing schedule, were also part of that meeting. It was at this time that Jane commenced discussions with the editor of the unit: ‘Passed on writing schedule and filled her in with likely “shape” of unit and her expected input’.
Thus began the series of iterations characterising the development, as drafts were prepared by Nicole, read and commented on by Jane, and fed back for further refinement. As the designer, Jane was keen for Nicole to appreciate what an acceptable unit of study might look like, and strove to have Nicole fashion her subject to the design that reflected Jane’s design ideas and the demands of the institution. Concurrently, Jane was keen to build her own appreciation of the subject, to learn something of its essence that would help her to work with Nicole in constructing an effective learning environment for the students.

At about this time the telephone interviews started with Jane. The first one was largely my attempt to ‘set the scene’ as far as the project was concerned, filling in the details missing from the diary records, such as the level of involvement of other faculty members and how much freedom there was with the curriculum. By and large, the author, Nicole, would be working on her own, and would have an appreciable degree of autonomy in interpreting the curriculum documents.

I also asked Jane whether she anticipated many problems with the project.

Jane  
Well, I’m always a little bit anxious until I actually start getting material. The lecturer’s very busy, of course, as everybody is, and one of the things I’m doing is pushing her hard at the moment, so if she is going to be in strife, we can start identifying that now, ... .

I gave her the dates that she will have to be meeting for the deadlines and she fell off her chair, as they usually do. And I said that those are the outside dates and there is no further elasticity, and if you feel that there is going to be a problem, then now is the time to go to your dean and say ‘Listen, you must set my priorities for me, because I can’t do everything’. I find especially with newish lecturers, I’m doing this all the time; I’m having to tell them how to run their own lives. (Interview transcript – 31/7/91)

Interestingly, when later checking the transcript of the discussion, Jane added the comment ‘Aren’t I arrogant!’ in the margin next to the above paragraph. The comment seems typical of Jane’s attractive mix of firm opinions tempered with good humour.

As I’d been working on a project with similar content in Hong Kong, I mentioned to Jane that Nicole might appreciate seeing some of our materials. The offer was accepted and, shortly after, some sample materials were despatched. As Jane later noted:
Looked thro’ Guidance’ materials sent by David. Wrote memo to Nicole to indicate some useful examples of interaction—she will probably find the familiar subject matter helpful. (Diary entry – 13/8/91)

The updated version of Chapter 1 was deemed to have good structure and organisation, although still needed interaction. Amendments were made during a meeting a couple of days later, and a printed version was subsequently handed to the editor.

Concerns about style seemed to be apparent at this stage, as, after receiving Chapter 2 from Nicole, Jane noted:

Very literate style, but lacking interaction or any invitation to the student to reflect, question or analyse. I will make such suggestions at next meeting. (Diary entry – 22/8/91)

Nicole agreed with the comments at the meeting, at which she produced some study tasks for incorporation into Chapter 1. Jane handed over Chapter 2 with comments at this time. Later the same day, Jane commented in her diary:

Editor has already edited Ch. 1 as it stood. I retrieved material from word processing queue and added in Nicole’s newest additions (thereby actually answering a couple of the queries by the editor on the draft). (Diary entry – 23/8/91)

The new version of Chapter 2, delivered a few days later, was met with a positive response from Jane, though there were some minor criticisms regarding some overly demanding study tasks, objectives that were not met in the notes and unstructured headings and subheadings. These comments were taken on board by Nicole, amendments were made, and Jane had what she considered a good chapter.

The Introductory Outline which was due at this time had not been completed. Jane and Nicole discussed some of the details, including tutorial and study school options, and the outline was duly produced by Nicole a week or so later. Jane also noted in her diary about the danger of slipping behind schedule.
As noted earlier, Jane’s concerns thus continue to be a mix of her ideas of what constitutes ‘good’ distance education materials (in particular, the interactive components), and the particular demands of her institution, especially with respect to deadlines and arrangements for the administration of the subject. At this stage the final design of the subject is still not fixed, in the sense that there is an evolutionary feel to the development as it proceeds. Broad end-points are in view, but the means of obtaining them and the precise nature of the learning materials is still undergoing modification. The role of positive feedback from Jane to Nicole is also a key component of the development process.

The second interview took place at this time. Early in the interview, I picked up on a comment Jane had made in her diary about the confused nature of the draft material. She explained her viewpoint of the situation at some length:

Jane: It was confused, as far as I remember, as much as different sections had no relation to the following one. She had thrown in a lot of extra material and not linked it with other stuff. She’s very, as I have said, literate, her sentences are constructed well, ... (David: But it was more of a random collection?) A good description, yes. I really didn’t know what it was she was trying to do.

Unfortunately it seems that this is a way that our working together is developing. She is giving me something when I turn up that she feels she needs to, although I don’t think there is anything I can do with it at that stage. Left to her own devices, she would probably sort a lot of it out herself—it’s just that she hasn’t got round to it yet. It’s just we have a date to meet, so she gives me material.

And I’ve also discovered that if I spend too long at an early stage making criticisms, I might have wasted my time, because she may not have read the criticisms before she gives me the next draft. To give you an example of how busy she is I went into work yesterday hopefully to pick up the next draft I will be discussing with her on Friday. It wasn’t there. So when I got home I phoned her, in the office about 4.30 pm and she said no, she hadn’t got it done. She’d give me a ring if it ended up being there before Friday in case I was coming in and it was worth picking it up.

I got a phone call at 9.30 pm last night at home. She was in her office, she’d just finished that particular chapter and did I want her to deliver it to my office… Well, this is what she is like. And so I think she just gets onto the next thing she’s got to do on her list. She hasn’t got much chance to get back to previous work. (Interview transcript – 28/8/91)

An ongoing complication for the development of this subject was that the degree to which it belonged was undergoing reaccreditation. Thus, at about this time, some details of unit content were affected, along with the Outline.
Continued progress

A week or so later, Jane seemed quite pleased with the draft of Chapter 3 she’d received.

Good explanation of two contrasting theories, and some testing study tasks well interspersed. She seems to have the hang of this now — sometimes needs watching when she goes overboard with an idea (too esoteric for students’ needs), but mostly a ‘tidying-up’ job this time. (Diary entry – 18/9/91)

This job was done by Nicole and Jane working together and making changes on disc as they went, so that Jane could go away with a corrected version. After some minor amendments, Jane passed on a printed version to the editor. A few days later, Jane made the following comments on the next two chapters:

Ch 4 generally OK — some subtitling needs organising and there are a couple of heavily theoretical sections I think can be axed. Ch 5 is a different story. Another rather random collection of sections not following objectives. (Diary entry – 25/9/91)

Subsequently, some corrections were made by Jane and agreed to by Nicole, and comments on Chapter 5 were passed on for Nicole’s next draft.

The third interview took place shortly thereafter. After first finding out about Jane’s background, discussed earlier, the follow up questions had to do with the constraints imposed on her by the system. Jane first explained that in applying for tenure she was required to study a postgraduate course in distance education. Further, she is now left mostly to her own devices in developing subjects with other academic staff, finding that the major limitations of the job are time and resource restrictions.

As the conversation continued, Jane surmised:

Jane It would be wonderful to branch out into extra media, but nobody has the time to write a shooting script for a video, for instance. The facilities would be there, but nobody’s got the time to produce things like that. So we are relatively limited. (David So you’re more or less print bound, then?) I love audio tapes; I try to incorporate them, especially in things like interviewing techniques.
The other thing is that we, because we are relatively small in terms of the number of students enrolled in most units, there is the element of face-to-face contact which occurs throughout the semester. That is important to us as being officially an extended campus operation. That’s the difference between extended campus and external (David Very subtle) Mm. (*Interview transcript – 26/9/91*)

After reading the transcript, Jane added the following comments about their extended campus in the margin:

> It sounds subtle, but in fact, when you look at the (lack of) personal interaction in most truly external operations in Australia, there is a big difference. This is important in our ID and planning of units.

**The pressure of deadlines**

Jane went on holiday for a couple of weeks at this time, and the revamped Chapter 5 was waiting for her when she returned. A measure of anxiety concerning deadlines emerged at this time, shown by Jane’s comments:

> Nicole had phoned to say she couldn’t meet me today, But would leave another chapter for me. But, no new chapter in my in-tray. (Now I’m a bit anxious about getting the first study booklet in from her by Nov 1st deadline – 7 chapters in all + associated Reader articles.) *(Diary entry – 25/10/91)*

However, to her relief, the sixth and seventh chapters arrived during the next week. Although there were some concerns about lack of interaction, the drafts were amended within a few days, sent to the editor and transferred to the network for the word processor. Time was very pressed at this stage, and there were worries about changes to the Introductory Outline and the addition of an eighth chapter. An indication of the urgency is that Jane’s diary entry for checking Chapter 8 was marked 11 pm to 12 midnight!

So the first study booklet came near to completion. Work was meant to start immediately on the next booklet. However,

> In conversation on the phone last Thursday she told me there could be complication in her completing the unit as per schedule, as she had research she was supposed to do. Today I spoke with my HoD who had spoken with Prof. Social Work to discuss options for completion. At my meeting with Nicole we then decided she should complete proofing etc. of Book 1 now, then continue with Book 2 in February. (The teaching school will be backcharged for any extra costs incurred by our department, but hopefully the schedule will fit in OK with my other ID commitments.) *(Diary entry – 19/11/91)*
Ways of working

With this decided, not much happened over the next month or so, apart from scheduling the next booklet and tidying up the first one. As an aside, Jane noted at the time,

When I provide close specifications of requirements to lecturers early on in the writing process I can be accused of being overbearing—anyway, I expect lecturers to make some decisions for themselves as to what’s best for their unit. However, I so often end up having to formulate their specifications for them anyway, they might as well have listened to me to begin with!

Soon after this time, there was a break in the interviews, during my move from Hong Kong back to Australia, the consequent settling in to a new position, and the Christmas/New Year holidays. In the next interview, at one stage Jane summarised the process that she followed with Nicole in developing each chapter.

Jane ... it’s not very complicated. It’s different with every different author I work with. But with Nicole, what has happened is she would give me hard copy of her chapter to begin with, and I would go through the chapter, amending or altering or making suggestions, and then have a meeting with her at which she will have the chapter up on the screen in front of her. And we will go through my comments and amendments and she will make the changes as we go through.

And then she will give me a disc, and then I ... will shove some kind of formatting in it so that I can see what it’s going to look like put it into the right font, or something like that, or correct any more spelling mistakes or grammatical mistakes that I haven’t bothered to go through painstakingly with her. But that’s the only kind of changes I will make with Nicole and then print that off. Simultaneously I’ll transfer my amended copy to the public folder for the word processor. My hard copy will go to the editor, as the editor always works in hard copy here. (Interview transcript – 24/1/92)

These comments led to a discussion of the change to working with computer discs and their perceived benefits or difficulties. The conversation proceeded as follows:

Jane ... other lecturers have given material in to me and are quite happy for me to make more substantial changes directly on disc. So they will give me a first chapter on disc, and I might actually make a few changes on the disc before printing it out. Provided I’m not making content changes, if they’re satisfied in working with me that the kind of changes I will make are not going to change the sense of what they are conveying, then I have done that.
You see the changes as, overall, being beneficial, over the past few years. Your work is now easier, better...?

What, because of this?

Yes, because of the computer? Or was it all in place when you arrived?

What, you mean the network, or with people giving me material on disc?

Well, the whole use of computers and discs.

Actually, one thing I ought to add to that material coming in on disc, if it’s a function of anything, then the most important function is making life easier for the lecturer. Because now there are a number of people who don’t use pen and ink and they compose directly onto the computer. And for them to have to produce their work in another format or means would be a long way round for them.

So when I get a disc of material in, then the people are telling me that they don’t want to have to proof-read this ever. They know that they’ve done a spelling check already, that they put their references in correctly, and they don’t want anybody re-entering material because they then would have to check it. And it’s actually been a difficult education job with the word processors, if anything. (David That their role has changed?) Yes, the word processors, if anything, didn’t enjoy having to reformat existing materials. They would far rather re-enter from scratch. But it’s been a re-education process for them because this is something that is just going to happen more often—finding it tedious to correct other people’s formatting mistakes. (Interview transcript – 24/1/92)

Later marginal notes added by Jane emphasised the benefit of making life easier for the authors, as well as listing other benefits such as better use of graphics, ease of updating and so on.

At the time, I picked up on a previous comment Jane had made that she might at times be accused of being overbearing (the clarifications by Jane were added by Jane while checking the transcript).

... one starts up trying to be endlessly patient in explaining things when you really know what’s going to happen in the end, anyway. I think several of us feel like that in totally different roles within our department. The administrative people think and often feel the same anyway that if they (the lecturers) only did what they’d been asked to do in the first place, then they (the administrative staff) wouldn’t face so much trouble, because they’ll end up having to do it again anyway.
David   But do you think that people aren’t mentally prepared? Whatever you say, their mind just isn’t in that gear to take in what you’re saying?

Jane   Yes. It’s because of the ... we have to be endlessly patient. It’s the way we are, it’s one thing we have to do. With experience of working with the job, you tend to know what seems to work. (Interview transcript – 24/1/92)

Back to work

Work on Book 2 had started in the new year, with Nicole handing over drafts of the chapters in late January/Early February. Fairly quickly, though, things started to go somewhat awry as far as Jane was concerned. After doing some work on a draft, she was handed a new version by Nicole, thus negating a lot of the effort she’d put in. Jane asked Nicole ‘not to do that again’. However, the entry for the next day reads:

New version of four chapters (two of which I had already worked on) handed to me by Nicole. The woman has some strange mental block. Trouble is, when she makes changes each time she does them directly onto the disk she will later give to us to transpose. I cannot therefore ignore her changes, which she suggests I do.

She has, incidentally, become a by-word in our department: not providing tutor information to admin; not reading information we send to her; and now – one of the books she has listed for her students is out of print! Never again ... never! (Diary entry – 12/2/92)

Other concerns and irritations became apparent in Jane’s recording of events and progress.

She has taken my comments on Study Tasks to heart (i.e. she has made them more task oriented & not just readings) — but in some cases she may have gone rather far (two or three ask for the student to go off and interview a selection of people on a topic, & with no applicable assignment or tutorial discussion topic I feel it’s rather unlikely this will occur!).

I’m finding her style rather tedious now. Well written and grammatical, but using unnecessarily long words, & therefore rather pompous. One of my major tasks in the second book is to isolate the major points in paragraphs to make into a sub-heading. I can sometimes read her work several times without knowing what she’s saying. She hasn’t apparently read all her readings recently. This is rather worrying—I’ve found one or two that aren’t really relevant to the topic in hand, & I don’t intend reading all of them! (Diary entry – 18/2/92)
Despite these misgivings, work progressed, with Jane passing on her comments on the drafts and meeting with Nicole.

Another telephone interview took place at this time, but was mostly concerned with broader and more general issues. This wasn’t that the diary entries weren’t relevant and interesting, but that there was a time delay in mailing them, so the discussion was concerned with ‘older’ records. One of my early questions was whether Jane had a broader input into the subject development than just the print materials.

Jane I suppose that if I had more up and go about me, I could have more of an input if I wanted to. I will often have input into suggestions as to what I think should go into the tutorials and study schools, and also I had a really long discussion with Nicole right at the beginning to help her decide when they should be, how often they should be and that kind of thing.

David Right. And on the basis of those discussions she’s gone ahead and happily organised things. I mean it just raises the question of what are the boundaries of your job, which are probably fairly unclear.

Jane Yeah. I suppose they rely an awful lot on the time available, my interest and the kind of relationship I have with the lecturer. (Interview transcript – 28/2/92)

At this stage the discussion was sidetracked into a chat about the time, some years before, that I had tutored some of the external subjects in Jane’s institution. We drifted back to the point eventually, though.

Jane I assume that it’s quite different from what you will find in a lot of other institutions in Australia, in as much as it may be one of the reasons why we can get away with having so largely print based materials, and maybe a relative lack of interaction. We don’t have to bend over backwards always to try and find some appropriate method for students to be able to demonstrate slightly more complex skills like counselling or interviewing or group based skills, because we can always have these tutorials or study schools. And in fact, I don’t know whether it’s being strictly adhered to, I think from what I’ve heard it might have slipped by the way, but we’re supposed to have an element of personalised interaction with students in every unit of study. So this takes place in tutorials and study schools.

David Does that mean that they are compulsory? They certainly weren’t when I was there.

Jane No, no, it means that they have to be available to the students.
David    Yes, because often the percentage of students that would turn up to tutorials was quite small in some cases.
Jane: Yes, it’s something that we arrange according to experience. Most lecturers know what areas cause particular problems, and what the best way to deal with this is. It happens, actually, that we have two study schools for this particular unit, and they are being made compulsory. They are only compulsory in as much as students have been told they’re supposed to come — they don’t actually get withdrawn from the unit if they don’t come. (Interview transcript – 28/2/92)

Relationships
The conversation then moved on to the relationship between the instructional designer and others involved in the development, especially the editors, concerning whom Jane commented:

Jane: They sometimes feel that the Instructional Designer is making them do all the legwork and running around and sorting out problems, while the Instructional Designer goes off and does something else. But I am probably doing myself down, because I tend to do slightly more detailed work. In other words I probably make myself less available for lucrative money earning schemes because I will spend more time on things. But from my experience, you’re not going to … oh, I don’t know, I suppose it depends on what you want to get out as the end result.

David: If you want pride in the course materials, you’ve got to spend a bit of time on it. If your name’s going to be on it, for example. Yes? No?

Jane: I don’t know, if I ever actually stop and think about it, it’s something that worries me, that I sometimes feel as if two people are doing the same work. Of course what you’re going to get out at the end of it is something that’s a lot better, but I do wonder whether I sometimes spend too much time going through things.

David: That the editor would have picked up anyway?

Jane: Not necessarily. I mean, our editors, I think sometimes do themselves down, and I believe they are much more capable of doing things than they sometimes feel they are.

Later in the interview Jane came back to the relationship with editors.

Jane: And in passing I have heard the editors talk amongst themselves and when they were looking at the editor allocation they were saying things like ‘Oh, well if the new editors are going to be taking on some big change units, that it will be better if they work with one that will have Jane as the Instructional Designer’. And I found out from them that they do regard me as easy to work with because I do so much of the hard work. So, in other words, I don’t think in terms of the fact that I’m doing their work for them, it just means that they know that I will communicate with them everything I know and that I will
straighten it out before it’s got to them rather than leaving them trying to straighten things out.
David: Well, I think you can accept it as a compliment.

Jane: From an editor, yes, except as I said, I think maybe I do myself down sometimes because I don’t ... Ah, I dunno, it’s a case of drift, I would love to have more front end interaction with staff, before they have got as far as writing things down, but time constraints mean that very rarely happens. So I believe that everybody gets concertina’d down the other end. You know, you get away from the more exciting up front things, and all get stuffed into things down the other end. You get squashed into the detailed areas.

David: So if you’re sitting back and taking a long hard look at it, you probably feel you’re a bit bogged down.

Jane: Mm, I do ... Maybe I should be looking at other things I should do in the available time I have if I didn’t bog myself down so much. For instance, things like bits of research to tidy up and papers that should have been written, which I suppose I should do, but it’s too easy to put those things off. But, since I’ve only been back at work for three days a week since the beginning of this year, it’s perhaps an appropriate time to stop and think about these things. (David Yes.) I suppose the other thing is that it’s sometimes easier for staff in the academic schools to work with one person rather than to wonder to who it is that they’re supposed to be sending things to. Is it the Instructional Designer or is it the editor that I’m meant to be working with?

David: Yes, it gives them a focus, makes life easy.

Jane: And in the past I’ve worked with teams as I’ve said before, and also with contract writers, and I always try to simplify matters when that happens. I try to do most of it myself, not most of the work, but most of the interaction, so that there’s only one person who is phoning them up. (Interview transcript – 28/2/92)

Later, when reviewing the transcript, Jane picked up on the point about having more ‘front end interaction’, and added a marginal note:

I explained this in these terms to my HoD who agrees with me entirely. There are a couple of new fee-paying courses being written (including the MBA) & we are objecting over not being involved at an early enough stage. Our HoD is trying to do something about it, but finding the academic schools very thick.

Getting back to the interview, evidence of an element of irritation with Nicole had been creeping in to Jane’s notes, and I brought it up late in the discussion.

David: Now, reading through your notes, do I detect a slight element of frustration? (Jane Mmm!) Is it because Nicole is an academic with her head in the clouds, or how would you characterise the reasons for the problems that you’re having with the changes in the versions, and so on.
Jane Well, I suppose it’s been going on so long. She’s overshot deadlines, and she doesn’t make it easy, because each time she keeps making these changes. And I keep explaining to her how the changes can’t be accommodated. Yes, she has an academic humanities type brain that doesn’t understand technical restrictions. She’s also one of these people who regards our department as being an imposition upon her as well, giving her work to do.

David That was my next question—not so much your department, but how do you think she views you?

Jane Ah, I don’t think she’s ... She hasn’t really shown any irritation with me at all.

David But I mean are you basically a resource to her, or are you a partner? What sort of image do you think she has of you? Are you an equal contributor to this course?

Jane No, I wouldn’t say that.

David You’re someone sensible to ...

Jane Yes, someone who ... well, I suppose she wouldn’t understand the difference between an editor and what they do and anyone else in this place. So she probably thinks of me like an editor of a book, I expect. Someone she can discuss things with. I think that also since about Xmas time she’s regarded us all as a little bit of a chore. I won’t say a waste of time, but a chore.

David Because she’s so busy, you’re an irritation to her?

Jane No I don’t think as I said that I’m an irritation to her, but she does regard this as an extra task outside that which she’s supposed to be doing, and she’s doing some specific research for the department, which is being paid for by some government body, or something. And she feels that work on this is eating into her research time.

David So when she took it on she didn’t realise just how much work it would take?

Jane I don’t think it was a case of taking it on, I think she was told she was doing it. I think she probably realised it was going to take a lot of work, but she is a busy lady, and I don’t think it was a surprise to her, the amount of work. She knew right from the beginning—she was concerned right from the beginning about when she was going to have time to do it all. (Interview transcript – 28/2/92)

It was also at this time that the incident quoted at the beginning of this chapter (concerning making continual changes on disc) occurred. Part of the concern was that the deadline for the material to go to print was getting very near, about three weeks at the time. Consequently, after the incident Jane met with the Publications Manager, explaining the possibility of last-minute changes, and agreeing to provide a covering memo when the material went to Nicole for final
proof that only essential changes should be made. Jane ruefully noted at the time:

I’m not very happy with the final result, either. Nicole has not incorporated many of my suggestions—and it’s too late to go back to her. *(Diary entry – 3/3/92)*

Finally, the checking was completed and the material returned by Nicole, which Jane discussed with the editor.

Editor is happy with the corrections—Nicole hadn’t addressed some specific queries so we made some ‘executive decisions’ between us. *(Diary entry – 20/3/92)*

A few days later the final diary entry reads:

Final corrections completed and signed off.

GONE TO PRINT!! *(Diary entry – 27/3/92)*

**Reflections**

The final telephone interview followed shortly thereafter. I had by then received the diary notes concerning the incident cited at the beginning of this case study, and I attempted to pursue it further. It then led to an interesting interchange, as two instructional designers (Jane and I) reflected on some of the trials and tribulations of our jobs.

*David*  
In your diary, you had an interesting little interaction with Nicole on the third of March. Was that a little bit heavy, when you were working on something and she said she’d reworked it?

*Jane*  
Yes, that was the only real chill that we’ve had. But it obviously was a case of I had to put my foot down and tell her to stop it. I mean, she knew ... she must have known better—obviously I’ve accommodated her with everything up until now, and I was really angry. I didn’t swear at her, but I said ‘No’, I just said no. The actual feasibility, because I was sitting down with that chapter up on the screen, and it hadn’t gone to anybody else—I could have accommodated the changes, but I would have had to rework a certain amount of what I was doing, and she, for all I know, would have carried on and done it again with another chapter.

*David*  
It relates to the general phenomenon that we as instructional designers bend over backwards to accommodate people, but eventually you have to come down chop, and is that the right or wrong way to do it. Should we be operating differently? Is there some other way?
Jane: We could be nastier. Well, that is the nature of an instructional designer, isn’t it. We are supposed to be these people—negotiators—liaison and negotiation. I know when my job came up for me to be tenured, there was some complaint from somewhere or other that I was perhaps a little brusque or something. Somebody suggested that I ought to go and do some course on negotiation techniques because I... Two people, in fairly short succession, refused to work with me, but (this is going back some years) both those people in the end ended up being given the chuck from this place.

David: It shows you how... perceptive you are, or were!

Jane: It does, doesn’t it. You have a range of tactics. You start off being very straightforward with ‘these are the dates and this is what happens’, and then you end up doing a variety of different kinds of cajoling, don’t you? Again, however, this is extremely pertinent to what has happened, in our instructional designers’ meeting last Wednesday, one of the things on our agenda was this series of ‘what happens when materials come in late’, which has always been an ad hoc kind of thing. It has mostly operated in the... when the editor or instructional designer whoever it is who’s liaising with the author, is too exasperated—before they start swearing, they go to our head of department and pass the problem on to them. This has now been... we have discussed a more formal way of going about this, in other words, when is ‘late’ late, and how do we progress into the back charging situation fairly.

David: So there’s going to be a policy.

Jane: I don’t know when a policy’s a policy, but I suppose you could say it’s a policy accepted in this department. A series of... (David: Procedures?) Procedures, yes, when it’s so late this is what happens, and then we send out a memo from the head of department, and then how many memos there are before the dean’s brought in, that kind of thing.

David: But there’s a difference as well between doing something for a department and an outside client. For the department, in the end, you can say OK, it’s all too late, you won’t have it this semester. Now the problem you have with, say, for myself, we have a contract with an outside body, and then we are contracting writers to prepare the material. We can’t say to the writer, we can’t run it this semester—we have promised the client this is when it will run. It’s going to run whatever happens. So you’re in a slightly different situation.

Jane: Well, I don’t know, there should be some kind of accountability for that within the contract, isn’t there. I mean, there must be penalties to which you subject your authors, the thumbscrews if they don’t come up with the goods. Well, they don’t get their money, do they?

David: One of our authors has just pulled out, after the due date, he’s just suddenly dropped us in it. He’s said no I’m sorry, I can’t do it after all. So we’ve had to pick up the pieces by going around and collecting a team of other people, each to write one topic or chapter.
Jane Well, I suppose you have to build that into the dates that you make available, you have to expect that kind of contingency occurs. For instance, one of the things which we’ve done in the last two semesters which I was uneasy about was the deadline dates for our new materials, publicised in their real form. In other words, every lecturer involved with us was given the dates, the deadline dates for the department for submission of the introductory outlines, the first mailing date material and the follow up material. And the dates which were given were the really deadline dates, not with any elasticity built in. Now we have always, if you like, lied to lecturers!

Well, it’s an interesting exercise, but the trouble is, I suppose, everyone is used to this elasticity, and I don’t think believed people believed the deadline dates. As I said in our meeting, as part of the what do we do to formalise the system, make it better all round, I said if the current situation was allowed to run for another two years, let’s say, then maybe it would work, because people would then realise that there wasn’t any elasticity. But you have to run it for a while before people realise you mean it, and what has happened this semester particularly, is that because those were our absolute deadline dates and yet at that stage no mention had been made about backcharging, that you’re a very long way down the track before you can start threatening backcharging. And so we would have incurred expenses, in other words, already, before we can start saying we are going to backcharge people.

David So all in all it wasn’t satisfactory.

Jane Well, it might have worked if we’d let it run for a bit longer, because people would then realise what the system was. But I recommended and I believe this is part of the plan, that those absolute deadline dates would be brought forward a couple of weeks, so that then gives you more opportunity to produce correct warnings.

Towards the end of the chat, we returned once again to Jane’s relationship with Nicole, and how she felt about the outcome.

Jane As I did say in my notes, I am not really happy because the study tasks have really become a bit of joke

David You mean in terms of their demands?

Jane Well ... necessarily, and what I put down, yes. They’ve now become assignments in their own right. It is difficult to angle these towards usefulness if you can’t wave an exam under the students nose at the end. You can’t expect them to do everything because it might come up in the exam, and they know what their assignments are, you can only hope that they carry on and produce or do this for their own good, their own feedback, and because it might come up in discussions in tutorials. Two or three times we have put an additional note to say that this might come up in tutorial discussion.

David With Nicole. Your encounter didn’t necessarily upset your relationship with her?
Jane I haven’t had to have much to do with her since then, its mostly been backwards and forwards from the editor to her. And she has been in a busy flurry anyway, but when it came down to it like the latest deadline I had given her for returning the material was the Friday, but we could manage the Monday if she really needed the extra weekend. But in actual fact the material appeared last thing on Thursday. So she has met these things in the end but she met them by being here at work until 1 am. ... She claims!

David I mean it’s a bit hard to knock people when they are working hard, isn’t it?

Jane Yes? It’s one of those units which you are left feeling I hope somebody has time to look at this next time round, because once its really pulled together it will be much better. *(Interview transcript – 3/4/92)*

Postscript

And so the my work with Jane came to an end, but not quite. After reading and amending the final transcript, Jane added;

David,

I think this made fascinating reading — we’ve gone into some real meaty bits here! Don’t you think some of this would make some interesting ‘grass roots’ (or maybe ‘coal face’) reading for others? May I suggest that a slightly edited version from ... 

Subsequently, we extracted and edited some of the ‘meaty bits’, and added some discussion. Most of this stage was done by Email, and some of the messages have survived. They reveal something of a role reversal at times, illustrated by an interchange during which Jane has asked me to add ‘a last paragraph with a bit more oomph’. My somewhat rushed and bland effort produced the following response;

... to use typical ID tact, ‘I don’t feel that your conclusion has emanated from the preceding discussion’.

I was thinking more along the lines of ... I suppose it serves me right for passing the buck back to you.

My next effort elicited a ‘Muuuuuch better!’, and our efforts were despatched for possible publication.

*Background and case study details – Jane Hammersby*

- Experienced instructional designer and staff developer.
• Setting: Australian dual mode institution with major commitment to distance education.
• Case subject: Social Work Theory & Practice.
• Period of interviews and correspondence: 31/7/91 to 3/4/92.
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