PART E – CONCLUSION

Purpose: to summarise the argument, reflect on the Thesis, outline further research and provide a conclusion.

Introduction

In the concluding Part, I revisit the triadic model to suggest a meta-pattern of paradigm change and learning. This summarises the argument whereby epistemic learning is seen as giving rise to an ecological worldview which sets a context for preceding worldview 'moments'. In the second section, I stand back and reflect on some of the issues that arise from the Thesis and the argument therein, and outline avenues of further research. Lastly, an overall conclusion is drawn.

1 PARADIGM CHANGE, LEARNING AND THE META-PATTERN

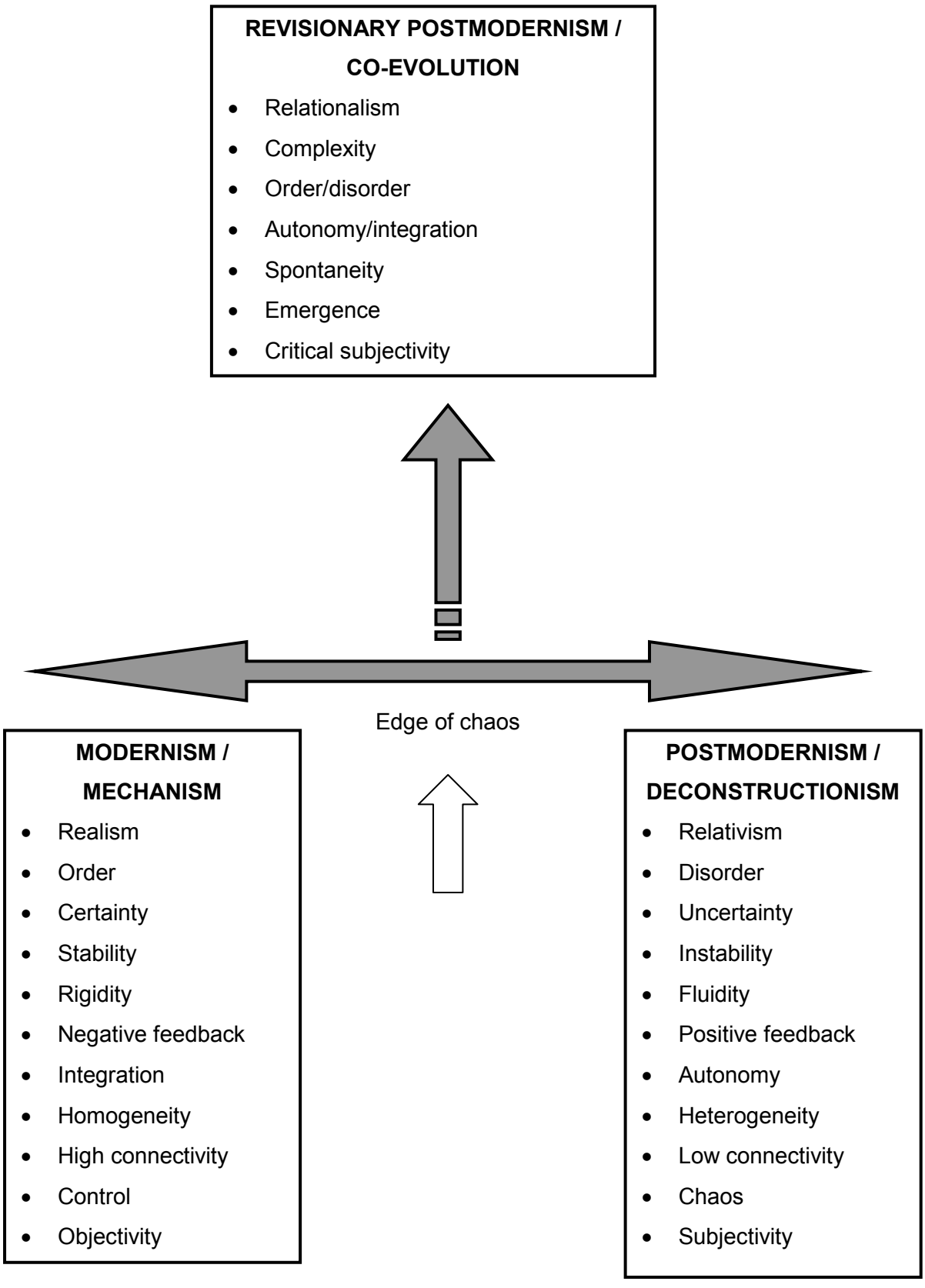
There seems to be a meta-pattern, which I suggest as a final and (rather dauntingly) whole integrative hypothetical framework for much of the ground and argument covered in the Parts above, building again on my triadic model.

With the work of such writers as Stacey (1996), Reason and Goodwin (1999), and most latterly Capra (2003), on living systems and organisation in mind, it seems valid to propose the following model. Here, I have cautiously but intentionally associated what such writers have said about the dynamics of any living system human and non-human, and set this with the fundamental pattern of three metaparadigms, being modernism, deconstructive postmodernism, and revisionary postmodernism, reviewed earlier as systems of thought or epistemologies.

There seems to be a parallel here between the dynamics of living systems and our own paradigmatic thinking (see Diagram E.1) below. Hence, the first, left-hand position, is the dominant paradigm, rooted in modernism, mechanism, and realism. The second, right hand position, is the deconstructive postmodern stance, embracing constructivism, idealism and relativism. The first position is associated with control, belief in and the assertion of certainty, determinism, structure, authority and so on. The second critiques this and asserts individualism and autonomy, and questions any final authority, certainty or validity. The horizontal double-arrow suggests a spectrum of belief here. Using complexity theory, the extremes of the arrow suggest *breakdown* of

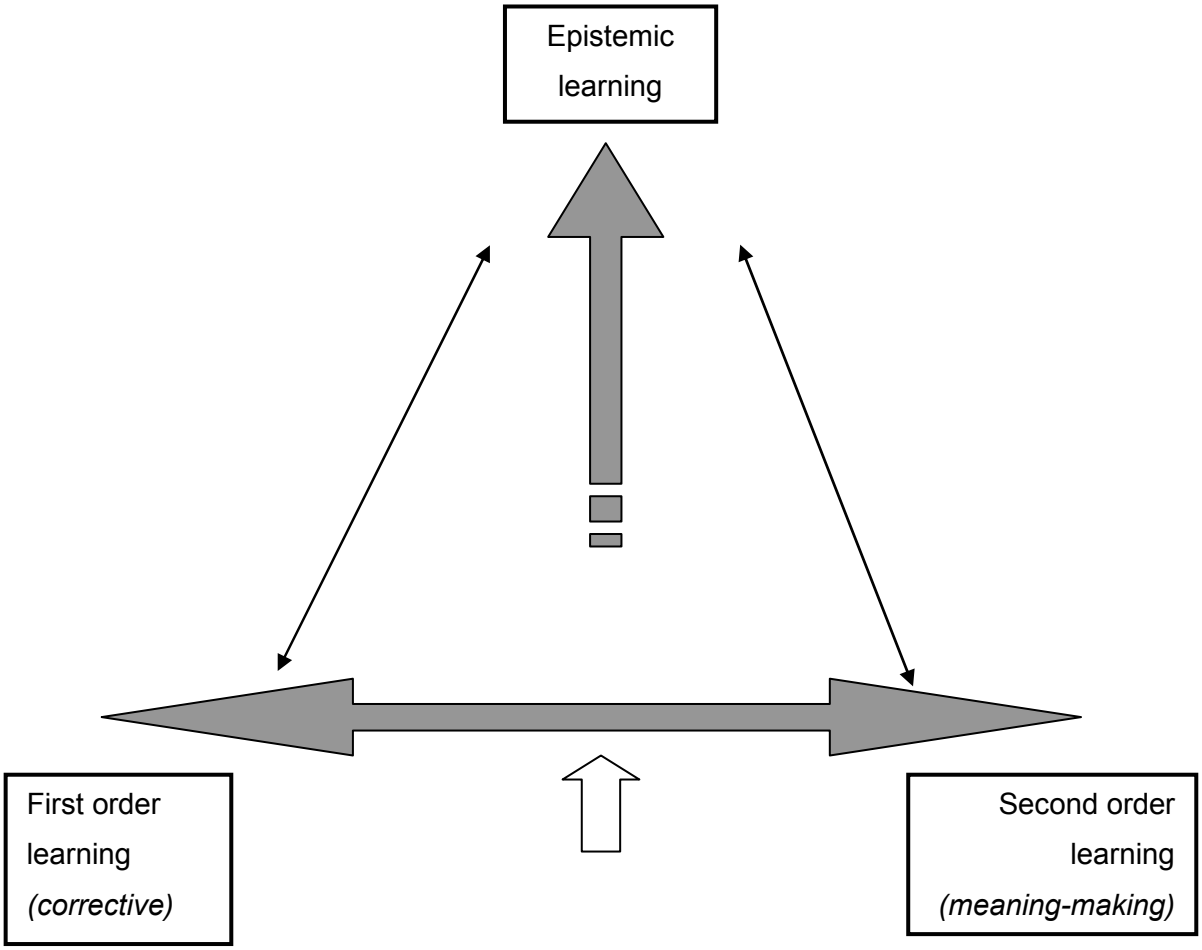
systems - through too much rigidity at one end or too much randomness and dis-integration at the other. This also applies to organisations, structures and communities which manifest these patterns of thinking at these extremes. This echoes the ideas examined in **Appendix I** (Holling, Gunderson, Peterson, 2002) about unsustainable systems being those that are caught in either a ‘rigidity trap’ or ‘poverty trap’. Rather alarmingly, and if valid, this model seems to illumine many of our human systems as lying perilously close to both extremes of this spectrum, characterised by too much control and mechanism at one end, and too much social, economic and ecological chaos at the other, with both states seemingly locked into a dangerous positive feedback loop. If this analysis is valid, we badly need to recognise the possibility and promise of the third state through transformative learning, before we experience large-scale systemic breakdown. Yet, at the same time, this crisis makes the possibility of breakthrough more likely.

Diagram E.1: Putting it all together – three metaparadigms



Taking this working hypothesis further, if I now overlay my work on learning levels (or orders of change), the following is obtained (Diagram E.2).

Diagram E.2: Orders of learning



This is another rendering of the triadic model which I have represented previously as nesting systems and in a Venn relationship, respectively. Here, I have used an upside-down 'T' to indicate 'edge of chaos' as a 'breakthrough' state from the main spectrum.

Echoing again my argument about evolutionary change in paradigms (rather than incommensurability), we can say that the dominant modernist paradigm is relatively 'stuck' - that is, not self-aware, or is unwittingly self-referent - within first-order, 'more of the same', change. Indeed, as Bawden (2000a, 9) states: "by virtue of its own epistemological, ontological and axiological foundations, it cannot be self-critical".Thus, the second position on the diagram, the postmodern deconstructionist position, has had a very important liberatory effect - it may be seen as second order change or

learning whereby modernism is deconstructed, yet its own constructs do not admit the possibility of progress beyond this position.

Now let us turn again to the meaning of learning. As noted in Part B, it is partly involves *correction* and partly *meaning-making*. The first position, as we have seen earlier, emphasises adaptive learning or correction (often directed). The second position puts far more emphasis on meaning-making and critically reflective adaptive learning (often owned).

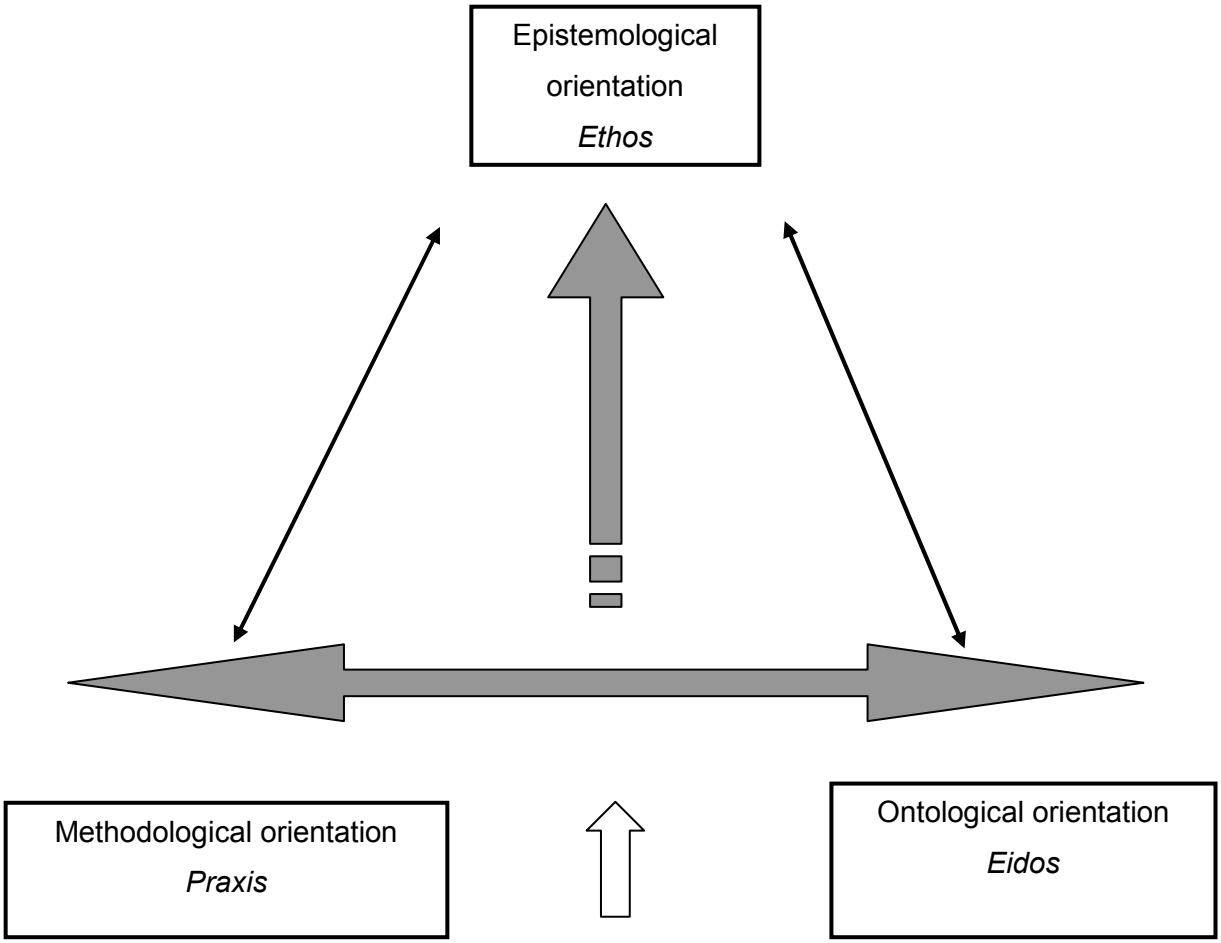
This brings me to a key point which has been touched on above, but I can now clarify further.

- Keypoint: These two paradigmatic positions both limit the extent of individual and social learning that our current world conditions urgently require. Modernism is unable to achieve sufficient correction necessary to move towards sustainability, deconstructionism is unable to generate sufficient meaning that gives us any guidance as to validity and worthwhileness. The result is that we have *a double crisis, of action and purpose.*

As the diagrams indicate however, we have a third choice, and this is epistemic learning which suggests a participative, ecological or relational worldview. This does not arise in isolation, but as third-order change, that goes beyond modernism and deconstructionism. At the same time - as its central position on the diagrams implies - it draws from both the previous positions, not least bringing together the corrective and meaning-making aspects of learning within a purposeful gestalt.

To complete the picture we can enter other key parts of our earlier triadic model (Diagram E.3).

Diagram E.3: Overlaying the three dimensions of knowing and experience



The black double-headed arrows indicate that third order change draws on the other two positions but also, as noted in Part B, feeds back to them, transforming and reorienting them in the process. Put more graphically, from the epistemic position, the whole view of the landscape below changes, including our ontology and our methodology. As I have argued, I believe that epistemic learning inevitably leads towards a relational or ecological worldview, wherein our Seeing, Knowing and Doing are more whole.

2 ISSUES AND REFLECTIONS

2.1 Issues

To assist clarity, I present these issues as a series of second-person questions and first-person answers.

1. *Is not the problem with all holistic approaches one of limitless boundaries? Have you not been in danger of saying rather little about detail?*

It is a matter of being aware that, although 'everything interrelates with everything else', we cannot capture or completely conceive the whole: it is about 'knowing that we don't know' and in Flood's terms (1999), attempting to learn and know within the unknowable. The argument in the Thesis focuses on paradigms, and this is where I have drawn my boundaries as regards subject matter. It is about the bases and possibility of paradigm change rather than about detail - about principles rather than specificity. If the argument is valid at this root level - and it is offered in a spirit of inquiry rather than certainty - it is for others (as well as myself) to evaluate and critique it, and if persuaded it is worthwhile, develop and investigate the detail and implications in their own contexts and circumstances.

2. *Is there not an inherent paradox here? You are critical of rationalism and have argued that rationality alone will not bring about the paradigm change you seek, yet this Thesis seems presented as a rational argument.*

I am critical of an instrumental and technocentric rationalism which denies the spiritual, intuitive and emotional aspects of knowing and of our nature. At the same time, I recognise that reason and intellect are valued in our society, albeit often to the exclusion of other ways of knowing. My argument has been that our inspirational knowing and our values inform our reasoning, and hence, that it is the quality of our underlying assumptions which is critical, whether or not these are recognised. This is a piece of academic writing which seeks to bring together - using Bateson's terms - both rigour and imagination. I have mounted an argument informed by deeper ecological values to deconstruct and critique instrumental rationalism, and suggest an alternative (whole systems thinking). At the same time, by using abductive thought (see Part A) I have used non-rational approaches to make intuitive leaps and discern pattern and connections which are reflected in the argument - and importantly also, in the structure which is not simply linear. While rational argument alone cannot bring about paradigm

change, or offer the experience of participative consciousness, it can help open perceptual doorways to more holistic and personal experience that accompanies transformative change, depending on the starting point of the learner. The task, as Kidner points out (2001, 37), is “not to reject the intellect permanently or completely, but rather to make it more accountable to those other faculties through which our relation to the natural order is sensed and expressed, so that it regains its consistency with these other faculties and so become integrated within a rediscovered whole”. I see the Thesis as a contribution to this end.

3. You seem to have a problem with the adequacy of language - can you comment on this?

The problem is one of language, meaning and communication. Our existing literacies and lexicon in this area offer limited potential to generate re-perception. So, the words:

- *ecology* usually connotes a narrow view of ‘ecology’, that is, most people think only about nature when hearing the term,
- *education* usually connotes a narrow view of ‘education’ and learning, that is, most people think only about schools, formal education and teaching when hearing the term. Similarly, people tend to think about learning as something that happens through ‘education’, rather than as a process intrinsic to life,
- *systems* usually connotes a narrow view of ‘systems’, that is, most people think either think about ‘education systems’ or ‘health systems’ for example, if they are unaware of systems thinking - or about ‘systems as discipline’ or methodology, if they are aware of systems thinking.

In each case, I have tried to develop and convey an expanded meaning. Further I have used the terms ‘whole systems thinking’ and ‘sustainable education’ to denote a quality of paradigm change in thinking and in education. There is evidence that my use of the latter term in previous work has helped many re-think their view of the purposes and nature of education. At some future point, with the benefit of hindsight, these might prove to have been inappropriate terms, but there can be little doubt that the right term or neologism can help perceptual change. Koestler’s invention of ‘holon’, or Kuhn’s use of ‘paradigm’ are excellent examples.

3. *If the Thesis stands up, then it has radical implications. If this the case, then - taking a systems view - it might be seen as too challenging to existing systems of*

thought and educational organisation. If so, this challenge might lead to retreat, consolidation and nil learning. Would not this be the opposite of what you believe is necessary?

Significant challenge to existing assumptions can either lead to retreat or epistemic learning. I think that a significant minority (to use Heron's term) - and probably a growing number - are sufficiently disenchanted with mechanism and deconstructionism to engage with a positive alternative and this itself is hopeful. Second, I believe along with Clark, Capra, Brown, Milbrath and others reviewed above, that we need consciously to accelerate learning towards sustainability, and I think that an argument which provides both a deep critique of currency and a constructive vision of possibility can only help this process. I am encouraged by the response to previous work (notably *Sustainable Education*) that such work can be inspirational and can engage with some people's own experience and sense of the need for deep change.

4. *Does your triadic model really have widely applicable validity, or does it just seem so because you have tried - too hard perhaps - to make phenomena fit the model?*

This is a concern, yes. I am reminded of this quote:

> Generality is desired - but is also to be feared…because once a theory is formed, once it seems to resolve paradoxes, and once it passes some empirical tests, proponents are sorely tempted to extend its application beyond its natural context.
> (Holling and Gunderson 2002, 19)

On the other hand, the triadic model almost seemed to 'suggest itself' and its richness to me. I did not force it. I make little claim for it other than it seems to be liberating in helping me, and possibly others, think about our thinking, our existing traps (to use Vickers' word) and our possibilities. Perhaps I have tried to make phenomena fit the model, but the extent to which this is quite easily possible seemed to me to help validate the model. And maybe this is enough for now - prior to any pragmatic application. Perhaps, borrowing Heron's thought about the validity of informational/propositional inquiry (1996, 169), it is "not true because it works, rather it works because it is true: its working does not establish its truth, it consummates it". Yet, however received by others, the model is still only a model: I would not like it to become some sort of restricting orthodoxy. It only has value if it helps those who find it useful to transcend the limits of the dominant paradigm.

5. *Isn't the whole argument here too involved for most educators to understand or at least bother with? Also, isn't there a conflict between the values of participatory learning and 'starting where people are' on the one hand, and the need for an historic and urgent shift of worldview on the other? In other words, aren't you 'telling people what to think ', and is not the whole argument just too teleological and universalising?*

In answer to the first point, I hope that the argument helps move the discourse on - but it is not meant for 'most educators' in this form. I think there is an important issue as regards the second point: I accept that, on the one hand, we need to start where people are and that any change must be participative, and on the other, that urgent change is needed. But these are not necessarily separate. We seem to be in a chaotic and transitory age - many people have a deep sense that something is wrong but also, it seems, often have a similar vision of what they want. There is "a growing consensus on what the future we need should be like" (Hicks, 2002, 67). Such ideas as health, community, connectedness and belonging, fairness, a sense of place and wellbeing have a common currency. I see the Thesis as a sort of contributory lubricant to the sustainability transition - it is not a blueprint or prescription in any sense. At the same time, the choice and debate should not be - as it seems to be at present - between sustainable and non-sustainable paths, but between different possible paths to ecological sustainability appropriate to different contexts and localities. Hence, the ecological paradigm implies diversity within an overall unity.

6. *So how would you reconcile the charge that whole systems thinking is simply seeking to replace one dominant epistemology with another?*

The paradox of systemic thinking is that at meta-level it is an epistemology that is inclusive rather than exclusive: it embraces and requires multiple epistemologies within this meta-view. Similarly, Ackoff states (1999, jacket), "It is in the nature of systemic thinking to yield many different views of the same thing, and the same view of many different things". Further, as I have argued, I am not seeking to replace or negate the key ideas of mechanism, modernism and postmodernism but suggest a more adequate relational worldview capable of subsuming them within a greater framework. But beyond this, it is also a matter of not being too attached to or precious about 'whole systems thinking' either, and to realise in Meadow's words (1997, 84):

> that NO paradigm is "true", that even the one that sweetly shapes one's comfortable worldview is a tremendously limited understanding of an immense and amazing universe. It is to 'get' at a gut level the paradigm that there are no paradigms, and to see that that itself is a paradigm…."

7. *But how can you be sure your version of whole systems thinking - that is systemisism and ecologism - is valid and sufficient?*

I can't be, entirely. The Thesis reflects a good deal of thought and reading, and my own 'experiential knowing'. But there is more identified reading I wanted to do and there must be much more good literature of which I am unaware. I think the Thesis is internally logical and coherent. It is bound to reflect my view of the issues surrounding and nature of the post modern ecological worldview, but any weakness in my argument does not invalidate the ecological worldview movement which is bigger than any one representation or account.

I believe that, following Reason and Torbert (2001, 14), I have gone beyond theory that is "merely descriptive, consistent and universalizable". I do think that I have developed a theory that meets Reason and Torbert's criteria:

> A good theory is *normative* (as well as descriptive), *analogical* (as well as inductive and deductive), *timely* (as well as universalisable) and *implementable* (as well as analytic).

At the same time, I am aware of further issues and these are reflected upon next.

2.2 Reflections

- It is such a big area of concern. Whilst working on the Thesis, and right up to the last section, I was often seeing new connections. On one hand this was exciting, on the other, it made me wonder what else I might be missing. I've been aware that at times I have been pushing my ability and thinking into areas where I felt less than confident, but believe that this is appropriate to a doctoral inquiry: to push one's own boundaries and limits.
- As a holistic inquiry, it necessarily has had breadth rather than depth (looking at Senge's 'dynamic' rather than 'detail' complexity). The cost of this, as I have been aware, is that in trying to establish the essence of some area, I have not always had time and space to go into the deeper grounding I would at times have liked. The Thesis is less strong on the affective and spiritual aspects of human

experience and transformation. I recognise the supreme importance of these dimensions of change here, but the intention, purpose and focus of this particular Thesis lies elsewhere.

- The problem of getting a systemic whole to conform to a linear order is a problem that anybody trying to write holistically about holistic subject matter encounters. I have tried to address this by using:
  -nesting systems in structuring in the Thesis,
  -summaries, iteration and building of key arguments throughout, backed up by cross-referencing,
  -the idea that the 'part is in the whole' and the 'whole is in the part' to inform my writing. Thus, I tried to write each Part so it could be read independently of the rest of the Thesis, whilst suggesting the broader argument.

  The writing process was a learning journey, and I did a good deal of checking back and revising as I went on.
- Frustratingly, there has not been enough time to properly consult all the sources I've gathered and filed over the years, but I hope that I have consulted sufficient material to give the Thesis real grounding in others' views and experience as well as my own. My other sources will still be useful in any postdoctoral research. Relevant material has mushroomed since I first registered in 1995, and it has not been possible to keep up with everything.

A good Thesis should raise more questions and indicate possible and necessary research paths. These are reviewed in Section 3 below.

3 FURTHER RESEARCH PATHS

A number of further research paths are suggested by the work in this Thesis. These include research into:

- how far the two key triadic models presented here - being 'learning levels' *linked to* 'paradigm, experience and knowing' - are valid and useful to others. If they are as significant and useful as I believe them to be, there is a strong case for having others use, test and develop them, both within and outside the environmental education community. I am aware that some work has taken place already along these lines.
- what sustainable education might mean in practice at different system levels and contexts, for example the institution, the community, the region, and the country, building on current work here in the UK and internationally. Again, there are examples of work underway.

- how far articulation and manifestation of the principles of sustainable education assists or accelerates its realisation and epistemic learning in any particular context. (Feedback on use of my *Sustainable Education* book (2001) indicates some ground for research here.)
- how systemic thinking can be made more easily accessible and comprehensible as a competence. This is already the subject of an innovative curriculum development project called 'Linkingthinking' (Sterling, Maiteny, Irvine and Salter *et al,* in press) that I have been working on with WWF Scotland since 1998 which seeks to demystify systems concepts and ideas, but there is huge scope for taking this further.
- how far people have an innate sense of systems irrespective of knowledge of systems concepts, and how this can be evaluated.
- how far systemic methods and tools in teaching and learning in both schools and higher education can assist epistemic learning.
- the nature of the epistemic/transformative learning experience, and the conditions of the whole 'learning systems' through which such change is made more and less likely.
- how far transformative learning necessarily leads to a more ecological consciousness. In other words, how far changing *how* we think leads inevitably to a change in *what* we think.
- the extent of ecologism and sustainability in the world of systems thinking, and the extent of systems thinking in the world of ecologism and sustainability, and how these can be brought into closer relation.
- how policymaking in education might be influenced towards whole systems thinking at any system level.

4 CONCLUSION

Learning can either reinforce the existing worldview, or precipitate the 'movement of mind' (Senge 1990, 13), the *metanoia* or profound re-perception of meaning that many commentators now advocate. In the end, transformative learning depends on the nature of the learning experience we have ourselves and can help assist for others. As a society and in the education sector, we can choose either to achieve it by conscious *design,* or have it thrust upon us by *default*, through the effect of mounting crisis. As Milbrath states, "resisting change will make us victims of change…it is absolutely essential to change the way we think" (Milbrath 1996, 188).

Yet one of the traditional roles of education has been to ensure continuity in society. The paradox that faces us now is that the more we try to ensure continuity by doing more of the same (first order learning), the more the future is likely to be discontinuous with the past, that is unsustainable and chaotic. Rather, by consciously embracing discontinuity in our learning systems - that is breaking through to a sustainable education paradigm - the more we will be able to ensure social, economic, and ecological continuity: and one hopes, secure a relatively smooth sustainability transition towards what Thomas Berry (2000, 55) has called the Ecozoic Era whereby "humans will be present to the Earth in a mutually enhancing manner". What I have attempted to do is show why this breakthrough is difficult but also how, and on what basis, positive movement is possible at any systemic level. This ecological basis sees s*ustainability*, (the ability for human and natural systems to self-sustain), as close to *self-organisation*, (the fundamental learning process), and this as close to *response-ability*, (the ability to respond to change), and these as close to *responsibility,* which is being accountable for the consequences of our attitudes and actions, which is close to *wisdom*.

In our times which are at once scaring and exciting, it perhaps is best to remain neither a hopeless pessimist, nor an unrealistic optimist, but a 'possibilist' (a term favoured by the founder of the Right Livelihood Award, von Uexkull, 1992). So - while we can learn our way to the future either by *design*, or by *default*, it is only the former that carries hope and creative possibility within it.

I finish with three quotes, which seem to sum up some of the key ideas of the Thesis. They illustrate the three themes of *reperception, reconnection* and *realisation* - in different ways touching on the need for humility and inner examination, the systemic nature of the world and our participative responsibility.

> *It is a mistake to try to reform the educational system without revising our sense of ourselves as learning beings.*
> Mary Catherine Bateson (1994)

> *No man is an Island, entire of itself.*
> *Any man's death diminishes me, because I am involved in Mankind; And therefore never send to know for whom the bell tolls: It tolls for thee*.
> John Donne 1571-1631

And lastly, the Jesuit Indian spiritual teacher, Anthony De Mello (Dych 1999) has a story of a spiritual master, who reputedly said:

> *Wisdom tends to grow in proportion to one's awareness of one's ignorance'. When asked for an explanation he said,' When you come to see you are not as wise today as you thought you were yesterday, you are wiser today.*

May we all 'come to see….'