What are the educational implications of developing a new social imaginary, brought about by the challenges to be faced in the 21st Century?

being a Thesis submitted for the Degree of Doctor of Education in Educational Policy and Values

by

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Terms and conventions

Abiotic The non-living parts in an ecosystem, such as soil, water, wind and temperature.

Biotic The living parts of an ecosystem, such as animals, plants, algae and fungi.

GHGs Greenhouse gases, such as carbon dioxide, methane, nitrous oxide, which can trap heat in the atmosphere, leading to temperature rises.

Humankind Referring to the collective name for human beings, people or persons

Eco-commons The life sustaining processes upon which all life depends

Social Imaginary/ social imaginary (use of capitals) The upper case use refers to a specific social imaginary, the lower case to the concept: the Modern Social Imaginary is the dominant social imaginary.

Domains Everything exists within the domains of space, time and matter, with a domain being the highest ranking.
Chapter 1: Introduction

1.1. Initial ideas

This thesis arose from two separate but linked sources: my life as a teacher, and my life as a Headteacher. Having started my teaching career in 1981, I taught in the pre-ERA era, having freedom to adapt and develop curricular as time, taste and interest dictated. From 1981 – 1988 there was a certain freedom, whereby different things could be taught to different children, depending upon events and interests, both of the children and the teacher. Whilst having weaknesses as an approach to curricula, as an approach to learning I felt it was very powerful. In 1988 the Education Reform Act (ERA) was enacted, and introduced the National Curriculum, what I and many others regarded as a politically prescribed, knowledge-based, and intellectually inert approach to the curriculum (Carr and Harnett 1996, Tomlinson 2001, Kelly 2004, Wrigley 2006, Ball 2008, Alexander 2010). From a personal perspective, it placed an impediment in the way of the teacher – pupil relationship. No longer was it a learning journey between teacher and pupils, often to an unknown destination, but now it was a repetitive, mapped out and clearly signed route to a specific destination, whether you wanted to go there or not. I felt that the manner of implementation, and the underlying approach to the curriculum, meant that I had metaphorically gone from open fields to brick lined alleyways, that I had moved from lighting fires to filling pots, that Freire’s (1993) ‘banking’ concept of education was made real in the National Curriculum and attendant testing. It seemed to me that the task of the teacher at least in part was to keep the embers of seeking meaning, of understanding yourself and the world that you lived in glowing, whilst paradoxically also measuring out the fixed units of knowledge needed to show how full your pot was. So my first source was seeing the role of the teacher as one whereby children are guided and supported on a journey where they begin to develop meaning about the world in which they live and will live, that there is a need to understand who you are, as well as how the world is, and could be, and the part that the person-in-the-child (Jeffrey 2002) can play in this. Underlying this is human agency, a future orientation, and a realisation that things are not fixed, but change with knowledge and time.
My second source developed from reflecting upon my life as a Primary School Headteacher. Having left Primary School Headship in 2001 for a University Lectureship, I was very keen to research the area that I had worked in. Originally I intended to develop work started in my Masters dissertation, by looking at ethical dilemma resolution amongst primary school headteachers. After developing ideas about globalisation, my focus shifted from the past, to the future. What sort of world would our children live in? I then began to look at the Rose (DCSF 2008) and Alexander (2010) projects on the primary curriculum; would this enable our children to understand the world they would be living in? As I researched these publications it became clear that the focus was a narrow one, of preparation for a particular view of the world of the now. The environmental challenges of the future were virtually ignored; instead a view of the future as being the same as the present appeared to be being engineered. Recalling Barth (1990:158) that a ‘school is four walls surrounding a future’ reminded me of the need for an educational focus on children, and their future.

A reading of the Department for Children, Schools and Families (DCSF) (2009) publication ‘Your child, your schools, our future’ brought home dramatically the need for this focus. The title had the child/ future focus. In it was a chapter called ‘Our ambition for every child: an education that prepares them for the challenges of the 21st century’. This implies that the challenges of the 21st Century are known, and that an education to meet these challenges can be developed. It was when I read the DCSF’s answer that I felt the poverty and narrowness of the current system was brought into sharp focus. The answer to meeting the challenges of the 21st Century was: personalisation. From this the focus changed from Headteachers and dilemmas, to Headteachers and what their perspectives of the future were, framed around the research area, *Is there an emerging ecological imaginary amongst educational leaders?*. This would entail interviewing primary school Headteachers and analysing their responses along an ecological spectrum, at the same time as developing the conceptual idea of an Ecological Social Imaginary.
However, it became apparent that the development of the conceptual idea of an Ecological Social Imaginary would require extensive exposition, and that it would be difficult to develop the idea sufficiently whilst attempting an empirical element of interviewing Primary School Headteachers. It was therefore decided to initially focus upon the conceptual element, with the empirical element being developed at a later date.

It was the realisation that at this point I had re-connected with my life as a primary school teacher, and that the journey of trying to understand the lived experience of a Headteacher had brought my research to the same place; to paraphrase T. S. Eliot, I had arrived at where I had started from thirty years before, but hopefully a little wiser. This led to the current thesis.

1.2 Introduction

The main focus of this thesis, then, is an examination of the growing concern by writers such as Princen (2005, 2010), Sim (2010) and Speth (2005, 2008) of the possible tensions between humankind’s current way of life and the ability of the planet to sustain this. Their concern is based upon the notion that for the last 300 years humankind has had a view of the world which put themselves at the centre of the world, that looked only at the present, and could look no further than the nation-state. For many (Heinberg 2010) that was a way of perceiving the world that was very successful. It brought health, wealth and material riches for many. It was not a tale of greed, or of humans being inherently materialistic, it was because of a particular way of perceiving or constructing reality. How humankind perceive and construct their view of reality will be explored through the idea of the social imaginary (Taylor 2007).

Many writers (Goldsmith 1996, Hamilton 2003, Jackson 2009) claim this way of life is only sustainable when the riches go to a few. When everyone wants to have the same resources as the richest, then the argument is that there are not enough Earths to sustain this (Chambers et. al. 2000,
Wackernagel et. al. 2006). This way of life also has implications for all of the life sustaining processes on Earth.

What may be needed, it is suggested, is a different way of perceiving and interpreting reality, one that focuses upon all life, which looks to the future, and takes in the Earth. This would have implications upon the whole way of life of humankind, and particularly the function of educators and education systems.

Bottery (2006:16) argues that educators need to develop ‘a greater ‘ecological’ role in providing others with an understanding of the world in which they live’. In this context ‘ecological’ means being aware of the wider macro aspects of an educators role, rather than a concentration upon the micro aspects. But ecological also has another meaning, in that it is ‘the scientific study of the distribution and abundance of organisms and the interactions that determine distribution and abundance’ (Begon et. al. 2006:xi). In this thesis ecological will be used in both senses, suggesting that educators should be aware of their world, and that the key aspect of this awareness needs to be about the environmental future. From this discussion emerged the main focus of the thesis.

The main research question (MRQ):

What are the educational implications of developing a new social imaginary, brought about by the challenges to be faced in the 21st Century?

In order to answer the MRQ there is a need to identify what a social imaginary is, initially this being the common understanding that makes social practices both possible and legitimate. Within the development of a new social imaginary is the suggestion that there is a current social imaginary. Likewise with the educational implications of the new social imaginary, what does education look like under the current one? There is then a need to identify the major challenges of the 21st Century. If a new social imaginary is developed to meet these
challenges, what form might it take, and finally, what could be the educational implications of this? These can be formulated as questions -

From the MRQ there follows a series of sub-research questions (SRQs);

1. The first SRQ is *What is a social imaginary?* To answer this SRQ there will be a discussion of the key ideas underpinning the social imaginary, and also an introduction to the idea of challenges that may be faced. This SRQ will be answered in Chapter 2: Key Ideas.

2. The second SRQ is *What is the current social imaginary?* To answer this there will be a discussion as to how social imaginaries change through time. This will lead to the identification of the residual social imaginary, which will be briefly discussed, and the dominant social imaginary, the Modern Social Imaginary. The key aspects of this will be identified and examined in Chapter 3: The Modern Social Imaginary.

3. The third SRQ is *What form and purpose does education have within the Modern Social Imaginary?* To answer this it will be suggested that education forms, legitimates and perpetuates the Modern Social Imaginary, and the key characteristics will be identified. This SRQ will be answered in Chapter 4: Education in the Modern Social Imaginary.

4. The fourth SRQ is *What are the major challenges of the 21st Century?* In Chapter 5 it will be argued that all social imaginaries face challenges, and in some respects are responses to differing challenges. The evidence for suggesting that the main challenges of the 21st Century will be ones to do with ecological issues, and the potential damage to the life processes of the planet through human activity will be examined in an attempt to identify the possible challenges facing humankind. This SRQ will be answered in Chapter 5: The major challenges of the 21st Century?

5. The fifth SRQ is *Can the Modern Social Imaginary meet these challenges?* To answer this the key aspects of the Modern Social Imaginary will be compared to the challenges of the 21st Century, and it
will be suggested that the possible challenges are of a scale and scope that may not be dealt with within the parameters of the Modern Social Imaginary. This SRQ will be answered in Chapter 6: The challenges of the 21st Century and the Modern Social Imaginary.

6. The sixth SRQ is *What are the key features of a social imaginary that can meet the challenges of the 21st Century?* To answer this a social imaginary will be developed, that, it will be argued, is better placed to meet the probable challenges of the 21st Century: an Ecological Social Imaginary. This SRQ will be answered in Chapter 7: The Ecological Social Imaginary.

7. The final SRQ is *What might education look like in the Ecological Social Imaginary?* To answer this it will be necessary to identify the possible aspects of an education that enables the Ecological Social Imaginary to be formed and legitimated. This SRQ will be answered in Chapter 8: Education in The Ecological Social Imaginary.

8. The final Chapter will be the conclusion, and it is here that the MRQ will be answered.

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Table 1.2 Chapters and research questions

1.3 Chapter outlines

Chapter 2: Key Ideas

This chapter sets out the key ideas that are explored within the thesis: the examination of the idea of a social imaginary; that a social imaginary can be organised around three key domains; and that social imaginaries are responses to challenges faced by societies. Taylor (2007) argues that all societies live within a social imaginary, which describes and guides how people view the world. It is the implicit background that shapes people’s thoughts and actions, that explains their reality. Initially three domains will be explored to distinguish different social imaginaries; the temporal, spatial and ontological. This will be revisited and developed in chapters 3 and 7. Finally, there will be an outline of some of the probable challenges facing humankind in the 21st Century. These challenges will tend to centre on the effect human activity is having upon the Earth, and will be briefly outlined, being developed at length in chapter 5. This will enable an answer to SRQ 1 What is a social imaginary? to be framed.
Chapter 3: The Modern Social Imaginary

This chapter will open with further exposition of social imaginaries, especially the distinction between social imaginaries and ideologies. A model of how social imaginaries change will then be developed based around an adaptation of Williams’ (1973) idea of residual, dominant and emergent cultures. The Pre-Modern Social Imaginary was based around transcendent time, community and hierarchy. In the 18th Century, it will be argued, a new social imaginary emerged, the Modern Social Imaginary. This is based around a contempocentric (Speth 2008) view of time, the Nation-State, and humankind as being the centre of reality. This, it is suggested, is the dominant social imaginary, the one that explains current perceptions of reality. Central to the Modern Social Imaginary is the idea of progress through the use of reason and control of the environment for humankind’s benefit (Sim 2010). The main values of the Modern Social Imaginary will be mapped out. This will enable SRQ 2 What is the current social imaginary? to be answered.

Chapter 4: Education in the Modern Social Imaginary

There will be a brief analysis of education in the Pre-Modern Social Imaginary, which was very local, based within the community, dependent upon social status and heavily influenced by religious teaching (Green 1990, Meyer et. al. 1992, Anderson-Levitt 2005). With the ideas of the Enlightenment spreading, and the growth of the nation-state, the Pre-Modern Social Imaginary was replaced as the dominant social imaginary by the Modern Social Imaginary, and this led to a different approach to education. Education moved from educating an elite, to mass and then universal education (Trow 1973). The role of education in the nation-state varied in purpose. Therefore some of the arguments to be developed are that education was used to assimilate the working class into a national culture and to be loyal to the state; in some societies to assimilate immigrants; to focus upon preparing people for an industrial rather than an agricultural life; to give primacy to economic growth over other purposes of education; and to provide professionals to run the state. In this way the education system became the key mechanism for forming, legitimating and perpetuating the nation-state (Green 1990, Meyer et. al. 1992, Anderson-Levitt 2005).
In form, a common organization developed, of schools, curricular based upon subjects, tests as credentials, age-based groupings and trained state-sanctioned teachers (Hornberg 2009). Curricular content was based around the national language, history and literature, often with a strong humanist and secular focus. This enables answers to SRQ 3 What form and purpose does education have within the Modern Social Imaginary?

Chapter 5: The major challenges of the 21st Century?

It is important to discuss and suggest the challenges of the 21st Century, as these will be the ones that children born today will live through.

There will be a critical examination of the evidence that suggests that the human population will grow beyond the current 7 billion, and that this growth, allied to growing enrichment and aspiration, will impact upon natural resources and Earth processes. This could also then lead to accelerated climate change and reduction in biodiversity. If this is the case, then this has implications for the life processes of the Earth, which all living and non-living things rely upon. The evidence that the Earth is undergoing some form of global change, and that this may be due to human activity will be examined; what is known as the Anthropocene (Harris 2012).

If these events are the key challenges of the 21st Century, then humanity will need to meet these challenges. It may be that human ingenuity through the use of technology will enable them to ameliorate some of the challenges (The Royal Society 2009), but it would appear to be doubtful that all of the effects could be overcome by technology (Gardiner 2011).

The inter-connectedness of these challenges and the limitations upon current knowledge as to the point when the combination of these may lead to unintended consequences (Thiele 2011) will also be examined, which means that treating a planet of finite resources as if it was infinite is problematic.

These challenges, it will be argued, are global, they will impact the future, and they are ecocentric, affecting all life. It is the probable impact of these events upon the life processes of the planet that answers SRQ 4 What are the major challenges of the 21st Century?
Chapter 6: The challenges of the 21st Century and the Modern Social Imaginary

The evidence from Chapter 5 will be analysed in order to draw out values implied by the evidence. If the values identified are congruent with the values of the Modern Social Imaginary identified in Chapter 3 then it implies that the Modern Social Imaginary is able to meet those challenges. If those values are different then it may suggest a new social imaginary. From the analysis a range of possible stances to the challenges will be identified, with the one that corresponds most closely to the challenges of the 21st Century outlined. This will enable an answer to SRQ 5 Can the Modern Social Imaginary meet the challenges of the 21st Century?

Chapter 7: The Ecological Social Imaginary

In order to meet the challenges of the 21st Century as identified in Chapter 5 it will be suggested that a new way of looking at the world may be needed, one based around a new social imaginary. What then, might be the emerging social imaginaries? Steger (2009a) identifies a Global Imaginary, which is global in the spatial domain, but still contempocentric and anthropocentric in the temporal and ontological domains. It still adheres to the key aspects of the Modern Social Imaginary. What would seem to be needed is a social imaginary that can attempt to meet the challenges of the 21st Century: spatially it would need to be global, temporally it would need to be future-oriented, and ontologically it would need to be ecocentric in order to sustain life on Earth. One answer that might fit this is an Ecological Social Imaginary. This will be mapped out in detail. This is a normative exercise, as it requires a change in values, of how humankind see the world, how they shape their reality. This enables an answer to SRQ 6 What are the key features of a social imaginary that can meet the challenges of the 21st Century?

Chapter 8: Education in The Ecological Social Imaginary

If it were accepted that the Ecological Social Imaginary is one way of meeting the major challenges of the 21st Century, then education in it would need to be based upon principles that give shape to the Ecological Social Imaginary. Chapter 8 works through these principles, identifying an educational metaphor that can give shape to education within the Ecological Social
Imaginary. The metaphor of the web, which represents the natural world, will be used to connect head, heart, hands and spirit, which represent the human world. In this way, the key values of Connective Education are mapped out and this would suggest a move from a ‘having’ to a ‘being’ mode (Fromm 1982). This would enable an answer to SRQ 7 What might education look like in the Ecological Social Imaginary?

Chapter 9: Conclusion and recommendations

The final chapter will draw together the evidence of the previous chapters to answer the MRQ What are the educational implications of developing a new social imaginary, brought about by the challenges to be faced in the 21st Century? There will then be some recommendations based upon this.
Chapter 2 Key Ideas: Domains, Challenges and the Social Imaginary

2.1 Introduction

This thesis, whilst investigating the educational implications of developing a new social imaginary to meet the challenges of the 21st Century, relies upon, and develops, what will be a number of key ideas. This chapter gives an introduction to these key ideas, which will be developed at greater length within the thesis.

Firstly it will be argued that humankind live within a reality that is made up of three domains, of space, time and matter, in that all things are made of matter and exist in space and time. How humankind’s understanding of these domains, and thus reality, has changed over time will be discussed, with the suggestion that this is due to humankind having fallible knowledge of these domains.

This is due to the second key idea, that how humankind knows, interprets and lives within that reality is through the construction of a social imaginary, which reflects humankind’s understanding of that reality, and within the social imaginary, education plays a key part in forming, legitimating and perpetuating the social imaginary. The social imaginary can be seen as a response to challenges faced by humankind.

Thirdly, it will be suggested that humankind constantly has to meet challenges based around the reality of living on Earth, in order to understand their place on the Earth. The scale and scope of these challenges tend to remain constant from the planet’s point of view, but how humankind understands what is happening changes in time. Humankind has always had to struggle to meet the challenges of the world in which they lived, and their response to that world.
For the Pre-modern Social Imaginary (developed in Chapter 3) it was the challenge of humankind’s relationship to a supreme being that shaped how the world was seen. The Modern Social Imaginary (developed in Chapter 3), which is the dominant social imaginary, was a response to the challenges of how human beings related to each other. What will be explored in this thesis is whether the Modern Social Imaginary is being superseded by a set of challenges that are to do with humankind’s relationship to the planet upon which they live and depend, and the possible implications of this.

The rest of this chapter will extend the key ideas by examining the following statements:

2.2 Humankind lives within a reality that is made up of the **domains** of space, time and matter, and humankind’s knowledge of these is fallible.

2.3 How humankind knows, interprets and lives within that reality is the **social imaginary**. Education plays a key part in this.

2.4 Humankind has faced many **challenges** within that reality in order to understand their place upon the Earth.

**2.2 Humankind lives within a reality that is made up of the domains of space, time and matter, and humankind's knowledge of these is fallible.**

Woods and Grant (2005) see time, space and matter as objective phenomena. For Lafayette (n.d.) they are universal categories. According to Weyl (1999:1) ‘space and time are commonly regarded as the forms of existence of the real world, matter as its substance. A definite portion of matter occupies a definite part of space at a definite moment of time’. It is through three-dimensional space and one-dimensional time that matter moves through (Sayer 2000, Woods and Grant 2005, Ashtekar 2006, Majid 2008, MPS 2010). This affects everything that exists or lives, as Ashtekar (2006:4) states

‘We think of space as a three dimensional continuum which envelops us. We think of time as flowing serenely, all by itself, unaffected by forces in the physical universe. Together, they provide
a stage on which the drama of interactions unfolds. The actors are everything else — stars and planets, radiation and matter, you and me’.

Whilst everything exists within space, time and matter, humankind’s understanding of how the three domains interact is dependent upon their knowledge of the world (Heller 2008, Polkinghorne 2008). For Aristotle ‘there was absolute time, absolute space and an absolute rest frame, provided by earth’ (Ashtekar 2006:2). This was superseded by Newton, for whom ‘time was still represented by a 1-dimensional continuum and was absolute, the same for all observers. All simultaneous events constituted the 3-dimensional spatial continuum. But there was no absolute rest frame’ (Ashtekar 2006:2). This in turn was generally superseded by Einstein, who merged space and time into a four dimensional space-time, in which matter would curve space-time and space-time would move matter (Majid 2008), with the action relative to the observer. The domains of space, time and matter also affect humankind, in that humans are part of and dependent upon the world, and thus phenomena that exist and live as matter in space and time, and also because they become an individual being through social activity (Straton 1960, Jarvis 1997, Sayer 2000).

Lawson (2004:12) notes that humans live in both the natural world and in a social world that depends for its existence upon humankind. Aristotle’s view of space, time and matter as being absolute with a fixed rest frame is not compatible with Einstein’s theory that space-time and matter interaction are relative to the observer. Yet for many hundreds of years Aristotle’s ideas were used to explain the world.

The way in which one set of ideas supersedes another shows that humankind’s understanding of the world changes; it must thus be fallible (Kuhn 2012). Popper (1983) advocates solving problems by ‘the method of conjecture and refutation’. There would be a starting problem, followed by a tentative theory. This would then be tested in order to eliminate errors, which would then lead to a new problem situation (Popper 1972:164). Central to this process is not to prove that a theory is correct, but to accept that ‘the criterion of the scientific status of a theory is its falsifiability, or refutability, or testability’ (Popper
In this way humankind’s understanding of reality is constantly tested and critiqued, and because of this may change.

The implications of this are:
Firstly, the centrality of the three domains of space, time and matter to humankind’s understanding of the world in which they live.

Secondly, that humankind’s understanding of space, time and matter changes, and is thus fallible, and dependent upon their extant knowledge of the world.

Thirdly, that ideas change over time, and that these changes enable humankind to know, interpret and live within the world, and that how humans know, interpret and live within the world at any point in time can be explained by the idea of the social imaginary.

2.3 How humankind knows, interprets and lives within that reality is the Social Imaginary. Education plays a key part in this.

2.3.1 What is a social imaginary?

The full exposition of the social imaginary can be found in Chapter 3, so this section introduces the idea and gives a basic outline.

The social imaginary is the common understanding that makes social practices both possible and legitimate. It ‘provides the background that makes sense of any given act in daily life’ (Arthurs 2003:579). Through being ‘background’, it is often difficult to ‘see’, as it frames how the world is: it explains reality. In this manner, the social imaginary defines what is ‘real’, and for most humans it defines the limits of thought and action. It becomes ‘this is how we do things’ and ‘why we do these things’, so defining expectations. It thus fuses values and actions, generally in an unquestioned manner.

This is done through ‘a language of signs and meanings’ (Taylor 2007:168), so that ‘all social imaginaries consist of a series of interrelated and mutually dependent narratives, visual prototypes, metaphors and conceptual framings’ (Steger 2009b: 13). It is through the language that human’s use, along with the explanatory metaphors, that humans are enabled to imagine their
existence. It is also imaginary, in the sense that being background it is not explicit.

It is also both ‘active and contemplative. It expands the repertory of collective action, and also that of objective analysis’ (Taylor 2007:167). The social imaginary provides an explanation for how humans interact, and is also reproduced by that interaction. The practical nature of the imaginary moves it beyond a social theory (although it is that as well) (Kavoulakos 2000).

Although the social imaginary explains and reproduces human interaction, it is not static, and is susceptible to change as human knowledge changes, meaning that how humans know, interpret and live in the world is not a constant.

Social imaginaries enable humankind to make sense of the world in which they live, as current knowledge is used to interpret the domains. In this way social imaginaries are made up of a spatial domain, a temporal domain, and a domain that expresses humankind’s current understanding of matter, what will, for the purposes of this thesis, be called the ontological domain. If reality is seen as the workings of the will of a supreme being, then matter will be interpreted in that context.

2.3.2 Education plays a key part in this.

Education plays a central role in the forming, legitimating and perpetuating of the dominant social imaginary by enabling the development of persons (Pring 1984), who then become ‘person[s] able to play a socially acceptable role as … human being[s]’ (Jarvis 1997:64). It does this in three ways.

Firstly through education persons develop a form of consciousness, for “to be conscious of things requires some set of concepts through which experience is ordered and made sense of” (Pring 1984:12), and through this the ability to make sense of the world, which also contains other persons. This links the subjective experience of the individual to the physical world they live in by engaging with humankind’s developing understanding of that world (Popper 1972) (see figure 2.3.2).
Secondly this is done, Popper (1977:46) claims, through the
learning of language, as

‘The ability to learn a descriptive and argumentative language is
genetically based, and specifically human. One could say of the
material genetic basis that here it transcends itself: it becomes the
basis of cultural learning, of participation in a civilization’.

Through learning a language consciousness is developed, concepts learnt,
and this then leads to the third aspect of education, cultural initiation.

Cultural initiation means developing as a particular type of person, which is
more often associated with education; intellectual virtues, moral virtues,
character traits, social competencies, practical knowledge, theoretical
knowledge and personal traits (Pring 1984). The self-reinforcing nature of social
imaginaries (Code 2006) can be shown through particular types of persons
being produced through education, which initiates them into a particular culture,
which sits within a social imaginary, which requires particular types of persons
to ensure its continuity.
2.4 Humankind is facing challenges that potentially threaten both themselves and all life on Earth.

The current geological period, the Holocene, started some 12000 years ago (Steffen et. al. 2007), and it was during the climatic conditions of the Holocene that humankind, along with all other extant life forms, flourished. It is these conditions that enabled life, as it is currently known, to produce the Earth as it is now: to endanger those conditions is to possibly threaten life as it is currently known. Up until the middle of the 20th Century the challenges faced by humankind were ones that were to do with their relationship to a supreme being, or to each other, only occasionally were they to do with their relationship to the world upon which they lived. There were impacts upon the physical world, but generally the challenges of how to live together, how to distribute resources and of having enough resources had a limited impact on that, and where it did impact it was localised (Diamond 2005). The world of humankind was sufficiently confident in its exceptionalism to see itself as apart-from the biophysical, the physical world. This may now have changed, with the pace of change and impact accelerating, to the point where after 1945 the growth in human use of resources and the concomitant waste led to it being termed ‘the Great Acceleration’ (Steffen et. al. 2007, Harris 2012). Indeed, the pace and spread of this change to the life-processes of the earth led to the term ‘The Anthropocene’ (Steffen et. al. 2011a), to highlight that humankind were now causing global changes to the life-process. This suggests that the actions of humankind had led to it impacting upon the physical world. More importantly, it was the impact of this that meant that the changes of the late 20th Century were potentially leading to challenges of a completely different type; the eco-commons, the elements that all life on earth rely upon, were possibly now being threatened (see figure 2.4). No longer was humankind threatening to destroy itself, but now it appears, through its cumulative actions, to be threatening all life on earth.
This raises two issues. Firstly, that before, if a society collapsed it was possible to move to other places (Diamond 2005), but in a ‘full world’ this is no longer possible. Secondly, whilst many of the previous collapses had an environmental aspect, the global nature of human activity means that the possible threats are now coming up against the foundational truth, that all life on Earth depends upon the eco-commons, such as earth, water and air (Commoner 1971, Goldsmith 1996, Rischard 2002, Bowers 2006).

2.5 Conclusion

It has been argued that reality consists of matter existing in space and time. This constitutes the physical world, and within this is the eco-commons, the life sustaining process upon which all life depends. From this could be developed a foundational truth that all life is part of, and depends upon, the eco-commons.

Humankind only understands how part of that reality is constituted. At different times there have been different interpretations of space, time and matter, what will be called the spatial, temporal and ontological domains and this is because humankind’s knowledge of the world is fallible. This is the subjective world of the individual, and the world of culture. It is also where the social imaginary is developed. How humans know, interpret and live upon the Earth is dependent upon their understanding of the spatial, temporal and
ontological domains, which change as knowledge is developed, and as different challenges arise. As the understanding of the domains changes in response to challenges, so does the social imaginary, and thus humankind’s understanding of the world. Education has a key part to play in developing persons, and of forming, legitimating and perpetuating the social imaginary (see figure 2.5).

Figure 2.5 summary of chapter 2

The idea of fallibility and of the domains is inherent within the idea of the social imaginary, which is developed in Chapters 3 and 7. The challenges that humankind may meet are discussed in Chapters 5 and 6. The educational response to differing challenges is discussed in Chapters 4 and 8. The implications of the foundational truth are developed within Chapters 5 and 6.
Chapter 3: The Modern Social Imaginary

In Chapter 2 (2.3.1) the idea of the social imaginary was introduced. This chapter develops the idea of the social imaginary by outlining the key idea (3.1), and this is followed by a discussion of the differences between imaginaries, ideologies and utopias in order to conceptually distinguish and link them (3.2). Following on from this a model of how social imaginaries could change over time is developed (3.3). Having identified how social imaginaries change, the dominant social imaginary will be contrasted with its predecessor, the residual social imaginary, and then the key elements of the current dominant social imaginary, what will be termed the Modern Social Imaginary, will be outlined.

3.1 What is a social imaginary?

In Chapter 2.3.1 it was suggested that how humankind knows, interprets and lives within the world has been created by humans looking at the world and their reality in a specific way, through a social imaginary.

Anderson (1991:6) applies the imaginary to the nation, and he sees the nation as imagined ‘because the members of even the smallest nation will never know most of their fellow members, or even hear of them, yet in the minds of each lives the image of their communion’. It is this image that enables a member of the nation to know that they are a member, that they share something in common with all other members and to know what makes them different from members of other nations. This would be a national imaginary.

This is similar to Williams’ (1961:48) ‘Structure of feeling’ that is ‘the central, effective and dominant system of meanings and values, which are not merely abstract but which are organised and lived’ and this leads to

‘a whole body of practices and expectations; our assignments of energy, our ordinary understanding of the nature of man and of his world. It is a set of meanings and values which as they are experienced as practices appear as reciprocally confirming. It thus constitutes a sense of reality for most people in the society, a sense of absolute because experienced reality beyond which it is very
difficult for most members of the society to move, in most areas of their lives (Williams 1973:9).

‘Structure of feeling’ then both defines and limits humankind’s understanding of the world, and they are also both abstract and lived, but for Williams it is not limited to a nation: in this there is a movement towards a social imaginary, which is wider than the nation.

For Castoriadis (1993: 102) social imaginary significations can be found in norms, institutions, values and orientations, which bring into being the collective life of a society. It is through this that humans make sense of ‘the invisibility of the structure of social reality’ (Searle 1995:5), which leads to ‘the dominant commonsense of a period or a place’ (Steger and James 2013:19). In this way the idea of the imaginary has moved beyond a particular nation to a period or place. It is this use of the imaginary that is developed by Charles Taylor (2007), and the one that will be developed within this chapter.

According to Taylor (2007:23), a social imaginary is ‘the ways in which people imagine their social existence, how they fit together with others, how things go on between them and their fellows, the expectations that are normally met, and the deeper normative notions and images that underlie these expectations’. It is both factual and normative, ‘that largely unstructured and inarticulate understanding of our whole situation’ (Taylor 2007:25) explaining both how the world is, and how it should be. It covers all aspects of social life, as it is ‘the way [people] collectively imagine, even pre-theoretically, [their] social life in the contemporary Western world’ (Taylor 2007:50) and this is done through ‘a language of signs and meanings’ (Taylor 2007:168). It is through these signs and meanings, along with images, stories and legends, that humans develop ‘that common understanding that makes possible common practices and a widely shared sense of legitimacy’ (Taylor 2007:23). It is both practical and embodied, ‘in the whole of social life, in social practices and institutions, determining particular personal identities as well as the collective-social reality’ (Kavoulakos 2000:204), and through this individuals can understand their place in the world (Gaonkar 2002). The notion of action requires emphasis, as a social imaginary is both how ‘people imagine and act
as world-making collective agents’ (Gaonkar 2002:1). What is it, asks Gaonkar (2002) that enables a society of strangers to live together but also to recognise similarities in other societies: the answer is the social imaginary.

For Steger (2009a: 6) a social imaginary is a ‘deep-seated mode of understanding [that] provides the most general parameters within which people imagine their communal existence’, so that it creates ‘an implicit ‘background’ that makes possible communal practices and a widely shared sense of their legitimacy’. They are ‘quite ‘real’ in the sense of enabling common practices and deep-seated communal attachments’ (Steger 2009a: 7). It is ‘how, in any age, members of society make some unquestioned assumptions about the social and moral order in which they live. This is what constitutes normality for them in their practices and in their relationships to each other’ (Hargreaves 2004:30).

A social imaginary then, is the unstated and unarticulated but commonly accepted and reproduced ideas and practices that allow people to live together in a way that enables them to know, interpret and live in the world in a meaningful manner. As much of this is not explicit, but continued through stories, metaphors and actions, it is how a society can function in a relatively harmonious and understandable way.

3.2 Distinguishing between ideologies utopias and imaginaries

In order to further understand the social imaginary, it is useful to distinguish between ideologies, imaginaries and utopias. Steger and James (2013:23) suggest that social life can be analysed in different ‘dimensions or layers’, and identify ideologies and imaginaries as two of these. These are nested, so that ideologies sit within imaginaries (one of which is dominant). Framing the social imaginary are the temporal, spatial and ontological domains identified in Chapter 2, and all social imaginaries consist of these domains, the difference being in how they are represented. The dominant social imaginary makes particular interpretations of the domains real and lived, so that imaginaries ‘are patterned convocations of the social whole. These deep-seated modes of understanding provide largely pre-reflexive parameters within which people imagine their social existence—expressed, for example,
in conceptions of "the global," "the national," "the moral order of our time" (Steger and James 2013:23).

This makes social imaginaries different from ideologies, as social imaginaries ‘also have a constitutive function, that of making possible the practices that they make sense of and thus enable’ (Taylor 2007:183) so that ‘the explicit grand ideologies gave political expression to the implicit … imaginary’ (Steger 2009a: 9). For Steger (2009b:6) ideologies sit within a social imaginary and this means seeing “political ideologies as ideational structures linked to overarching ‘social imaginaries’. In this way ideologies can be seen as ‘patterned clusters of normatively imbued ideas and concepts, including particular representations of power relations. These conceptual maps help people navigate the complexity of their political universe and carry claims to social truth’ (Steger and James 2013:23).

Thus ideologies are explicit foreground, whereas social imaginaries are implicit background (Steger 2009a: 6) that has a structure consisting of the spatial, temporal and ontological domains.

For example, in the current dominant social imaginary, the Modern Social Imaginary (developed below in section 3.5), the spatial domain is the nation-state, and within this ‘the elite codifiers of these ideational systems pursued their specific political goals under the common background umbrella of the national imaginary. Liberalism, conservatism, socialism, communism, and Nazism/fascism were all ‘nationalist’ in the sense of performing the same fundamental task of translating the overarching national imaginary into concrete political doctrines, agendas, and spatial arrangements’ (Steger 2009b: 9).

Thus Fascism in Germany was different to Fascism in Italy; Communism in the Soviet Union was different to Communism in China; and liberal-democracy in Britain, with its strong attachment to some aspects of pre-modern thought, was different to that of the USA. What they all had in common was the development of the ideology within a national framework. It was the imagining of the national (Anderson 1991) that sat them within the Modern Social Imaginary (Steger 2009a).

Langdriddle (2006: 653 after Ricoeur 1986) distinguishes between
Ideologies, which integrate group identity, and utopias, which give realisable alternatives, what Leonardo (2003:514) terms alternative realities. It is through utopian thinking that humans imagine different futures that can happen through purposeful choices (deGeus 2002:197). This could suggest a link between utopian thought and the emerging social imaginary. For example, deGeus (2002:189) talks of ‘ecological utopias’ or ‘utopias of sufficiency’, and ‘technological utopias’ or ‘utopias of abundance’ in which the

‘The basic difference between these utopias lies in whether an ideal society should enjoy material abundance and luxury or be based on satisfaction and sufficiency. Is the quality of life to be determined by luxury, richness, and excess or instead by simplicity, self-restraint, and moderation?’

Either could be an emerging social imaginary. Humankind lives within a social imaginary that consists of the temporal, spatial and ontological domains. How these domains are interpreted and understood changes, giving rise to social imaginaries, which give guides to understanding and action within the world. Utopias are attempts by humans to develop alternatives to their lived existence, one of which may develop into an emerging social imaginary: in this sense they are reactions to the current dominant social imaginary. Within the dominant social imaginary are competing interpretations and codifications of the social imaginary: ideologies. Ideologies interpret the key ideas of the social imaginary, and enable humans to understand their immediate social existence.

Ideologies then give differing perspectives upon the dominant social imaginary, but all have the same spatial, temporal and ontological domain. They give different ways in which the social imaginary can be lived. Utopias outline alternative realities, and thus tend to begin to map out emerging social imaginaries. The identification of dominant and emerging social imaginaries suggests that social imaginaries can change, and section 3.3 outlines a model as to how this might happen.
3.3 A model of how social imaginaries change.

Williams (1973) identifies a model of cultural and ideological change. This can be applied to the social imaginary. The dominant social imaginary defines and limits thought and action, beyond which it is difficult to act and think (Williams 1973:9). Whilst it is *dominant*, it is not *absolute*, in that at any time there will be both alternative and oppositional social imaginaries. How strong they are is dependent upon the idea of incorporation, with the dominant social imaginary incorporating aspects of them as a way of retaining legitimacy and reducing opposition. The alternative social imaginary is usually not seen as a threat to the dominant, and is often ‘accommodated and tolerated within a particular effective and dominant culture’ (Williams 1973:10). The oppositional social imaginary tends to be more of a threat, as it postulates ‘a different way to live and wants to change the society in its light’ (Williams 1973:11). There is also a residual and an emergent social imaginary. The residual social imaginary can still have effects within the dominant social imaginary as residual aspects remain alongside the dominant; they have been incorporated. The residual social imaginary used to be the dominant, until it was supplanted. The emergent social imaginary ensures that ‘new meanings and values, new practices, new significances and experiences, are continually being created’ (Williams 1973:11).

![Figure 3.3 Williams' Model of Cultural Change](image_url)
Whether the emergent supplants the dominant, and thus becomes the new dominant, depends upon how strong and coherent it is, and whether it resists the incorporation of the dominant. Within any social imaginary there are thus a number of different processes occurring at the same time, with an element of flux. This model is useful as it enables the identification of the emergent social imaginary. Within the context of this dissertation, the Pre-modern Social Imaginary is residual and the Modern Social Imaginary is the dominant. These will be discussed in the rest of this chapter. The identification of the emerging social imaginary will be the subject of Chapter 7. What then, are the key features of the current dominant social imaginary?

3.4 **What is the current dominant social imaginary?**

In this section the main aspects of the Modern Social Imaginary will be mapped, but before that there is a need to identify the Pre-Modern Social Imaginary, for as Bonny states (2007:10), the Modern is a relational term, one that can only be understood ‘within a contextual perspective, i.e. in opposition to something else’. In section 3.3 the ways in which social imaginaries change was developed, and it is important to remember that the change is often slow and difficult to identify as new social imaginaries emerge.

3.4.1 **The Pre-modern Social Imaginary**

In the ontological domain the pre-modern social imaginary was ‘a hierarchical order of personalised links’, a ‘vertical world of mediated access’ (Taylor 2007:158). Each person was allotted a place by God, with everyone knowing and staying in their place (Sim 2010). In the temporal domain society was built upon a comforting grand narrative based upon transcendence and within this grand narrative there was a concern ‘about ultimate matters in transcendent time’ (Kelly 2011:168). Time was ‘God time’ as people moved through the God-given time of the seasons. In the spatial domain the focus was upon community, as people ‘lived in small, cohesive communities and experienced nature in terms of organic relationships, characterised by the inter-dependence of spiritual and material phenomena and the subordination of
individual needs to that of the community' (Capra 1982: 37). The root metaphor of the Pre-modern Social Imaginary was the chain, as in 'The Great Chain of Being'.

In axiological terms the pre-modern social imaginary was organised around divine right (Princen 2005:7), hierarchy, Kinship, local community, tradition (Giddens 1990) religious cosmology and heredity (Sim 2010).

What Anderson (1991:7) calls the move from a ‘divinely-ordained, hierarchical dynastic realm’ to one based upon ‘a deep, horizontal comradeship’ which was ‘interwoven with an embedding in secular time, had to bring with it a different sense of our situation in time and space’ (Taylor 2007:175). According to Taylor (2007) the move from the pre-modern to the modern in the 18th century meant that European society moved from a social imaginary based upon community and hierarchy, to one based upon individualism and equality. This meant that the Pre-modern Social Imaginary moved from the dominant social imaginary to the residual, and that the Modern Social Imaginary moved from being an emergent social imaginary to the dominant one. This did not mean that all traces of the Pre-modern Social Imaginary disappeared, as in those nations where there was gradual change, traces remained, such as monarchies, aristocratic titles and private schooling.

3.5 The Modern Social Imaginary

In contrast to the Pre-modern Social Imaginary, the Modern Social Imaginary, arising from the Enlightenment, the Industrial Revolution and French and American revolutions (Hobsbawm 1962, Barry 1999, Bonny 2007, Schmidt 2007) began to change relationships to ‘impersonal egalitarian ones’ within ‘horizontal, direct-access societies’ (Taylor 2007:158). Society was now based upon a ‘grand narrative of economic, technological, and political progress’ (Sim 2010:35).

Taylor (2002) identifies three aspects that make up the Modern Social Imaginary: the economy, the public sphere and democratic self-rule. These are all elements of liberal democracies (Taylor 2002:122). It is with this that Taylor conflates the social imaginary with ideology. Liberal Democracy is the dominant
ideological form within the modern at the moment, but it is not, and has not been, the only ideology in the Modern Social Imaginary (section 3.2).

When Taylor (2002:92) talks of the economy, he means a market economy. To talk of a market economy as being a key aspect of the modern is to equate the modern with capitalism. Whilst this may be the dominant mode of production at the present, it was and is not the only way in which production can be organised. A command economy can organise production in a different manner to the market. What is a defining feature of the Modern Social Imaginary is the application of science and technology to industrial methods of mass production, powered by fossil fuels, replacing the former craft, guild and artisan methods (Hobsbawn 1962).

The public sphere is a consequence of urbanisation and communication technology. Through urbanisation people were congregated together, and so could meet and debate more easily, at the same time as cities had large open areas that allowed mass congregation. Print and electronic communication also added to this along with expanding education and the developing ability to read print. It became difficult for those in power to control all that went on within their polity. Interaction within the public sphere is secular (Taylor 2002:115), as it is not determined by religious laws, but by human interaction free of those.

The third aspect he identifies is democratic self-rule. Again, Taylor (2002) confuses the dominant current mode of political expression with the Modern Social Imaginary. Taylor (2002:123) mentions ‘a polity ruled by the people’, but this does not necessarily mean liberal-democracy (MacPherson 1966). The people can be seen as a racial group with a single will expressed through a leader, as in Fascism, or as an expression of class identity as shown in Communism. What these differing political ideologies show is that ‘popular sovereignty’ can be manifested in many ways (MacPherson 1966).

What this means is that the Modern Social Imaginary can be distinguished not by a market economy, but by industrial mass production; that it has a public sphere that enables interaction and communication; and that it is dependent upon popular sovereignty rather than democratic self-rule (Kelly 2011). Industrial mass production based upon fossil fuels meant that raw
materials and fuel needed to be extracted from the Earth in a manner that was more extensive than that required in the Pre-modern Social Imaginary. It is people who make, produce and purchase these items that are mass-produced. This implies a different relationship with nature, and a greater focus upon the individual who owns the products. There begins a move from status based upon who you are, to status based upon what you own. To have things, and to work for the money to purchase them, suggests a focus upon the now, rather than a focus upon transcendent time. The public sphere also focuses more upon the now, and it is also people who congregate within the public sphere, not to worship, but to exercise sovereignty. All of this happens in an area that is larger than the community, and draws together people who have an imagined identity, one based around the nation. All of this suggests that the spatial, temporal and ontological domains have changed in the move from the Pre-modern Social Imaginary to the Modern Social Imaginary.

Hobsbawm (1962:14) argues that the modern world arose out of a ‘dual revolution’: a political one in France, and an industrial one in Great Britain. It was these events that started to give shape to the Modern Social Imaginary. These events had their genesis in the Enlightenment of the 18th Century and the Scientific Revolution of the 17th Century (Hamilton 1992). These were the drivers that created the modern world. What they had in common was a set of ideas, the key ones being that they focused upon humans, who lived in specific geographical areas, and the activities of those humans focused upon improving life now. In this way they are anthropocentric in the ontological domain; nationalist in the spatial domain; and contempocentric (Speth 2008) in the temporal domain. The rest of this chapter examines the key ideas that make up the Modern Social Imaginary. This is done by firstly looking at the root metaphor of the Modern Social Imaginary, and secondly the domains and values that give it shape.

3.5.1 Root metaphor

Taylor (2007) identifies signs, meanings, images, stories and legends as key means whereby people both make sense of their reality, and reproduce it. It is through these that what Bowers (1997:6) calls ‘guiding root metaphors’ and
symbolic maps are developed. For many the root metaphor of the Modern Social Imaginary is the machine (Oliver and Gershman 1989, Hayward 1994, Bowers 1997, Sterling 2002, Princen 2010), reflecting a mechanistic view of the world. For Princen (2010:21), using the machine metaphor, the dominant form of the Modern Social Imaginary has been built by industrialists, ‘propelled by science and technology, fuelled by fossil fuels, geared by the workings of market, and driven by consumer demand’. Metaphors can be seen through the use of language (Lakoff and Johnson 2003, Healy 2013), and phrases such as “Working like clockwork”, “getting back on track”, “running smoothly”, “things are humming,” “well-oiled,” “on autopilot,” “we had a break-down,” “re-engineering,” and “firing on all cylinders” all suggest the machine.

Princen (2010:12) identifies some more of this language through associated metaphors; ‘the us-versus-them of military metaphors, the build-a-better-world of engineering metaphors, the get-the-right-price and buy-it-and-sell-it of commercial metaphors’. It is a language of confidence and progress. Confidence that goods will appear, that consuming will make the economy strong, and progress, in that goods will get better as they get cheaper and more plentiful. This is driven by the ‘belief that the world can be brought under human domination by the power of reason working through the agency of science and technology’ (Sim 2010:118).

Central to the Modern Social Imaginary is ‘its belief in humanity’s ability to exert control over the environment by the development and application of a rationally ordered technology of increasing levels of sophistication’ (Sim 2010:102). This is done through what Princen (2010:68) identifies as principles that epitomise the metaphors so that humans extract raw materials rapidly and thoroughly (efficiency principle); then convert them into products that people will buy (consumer rules principle); create markets everywhere (growth principle); dispose of the waste cheaply and invisibly (out-of-mind principle); and produce faster and faster, cheaper and cheaper (cheaper-is-better principle).

The worth of a metaphor can be seen through its ability to convey the key values of the social imaginary. By analysing the idea of the machine it is possible to see the values that it implies; the values of the Modern Social Imaginary.
<table>
<thead>
<tr>
<th>Machine (the mechanistic metaphor)</th>
<th>Modern Social Imaginary values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is designed and built by humans</td>
<td>This suggests an anthropocentric (Bowers 1997, Speth 2008) approach, as it is the reason of human beings, not the mind of God that designs and builds the machine (Hamilton 1992, Speth 2008). Without God, and reliance upon Human reason, there is the suggestion of secularism (Hamilton 1992, Bowers 1997).</td>
</tr>
<tr>
<td>It can be made from parts, each of those parts can be fitted together to make the machine. The machine can be broken down into its parts for maintenance, and for replacement.</td>
<td>Reductionism (Speth 2008) enables the smallest part to be identified and made into the whole. The ability to replace and reassemble reflects a focus upon the parts, which is seen as a rational (Hamilton 1992, Speth 2008) approach to design and production.</td>
</tr>
<tr>
<td>The machine makes things. Those things are reconstructed from natural materials, often reconstituted through the application of power.</td>
<td>The dualist approach that underpins anthropocentric thought (Bowers 1997, Speth 2008) enables the manipulation of natural materials without thought of replacement. The use of reason and rationality, empiricism, and science (Hamilton 1992, Bowers 1997, Speth 2008) enables the raw materials to be changed.</td>
</tr>
<tr>
<td>The machines are powered directly or indirectly by fossil fuels, or by fuels derived from the application of science.</td>
<td>The use of fossil fuels to power and manipulate shows the superiority of reason and rationality, empiricism, science (Hamilton 1992, Bowers 1997) as humans (anthropocentrism Bowers 1997, Speth 2008) begin to produce non-natural goods.</td>
</tr>
<tr>
<td>The use of the machine can be controlled by humans. They are predictable in what they produce, and each of the components that are used for making things can be readily measured.</td>
<td>The ability to replicate (Bowers 1997) in large numbers, with every part of the process contributing to the whole is further evidence of reductionism (Speth 2008).</td>
</tr>
<tr>
<td>What is produced by the machines is generally uniform, and very often each part will be standardised.</td>
<td>This is efficiency, showing the application of reason and rationality, science (Hamilton 1992, Bowers 1997, Speth 2008). Uniformity and standardisation also imply reductionism (Speth 2008) in order to achieve them.</td>
</tr>
<tr>
<td>The things that are produced can be sold to or used by humans, either directly or indirectly.</td>
<td>Humans produce goods for other humans [anthropocentrism] (Bowers 1997, Speth 2008). Generally those things are</td>
</tr>
</tbody>
</table>
The design of the machines can be improved, developed, adjusted, in short they can be controlled, and the workings of the machine can be made more efficient. It is through this process that progress (Hamilton 1992 Princen 2005) is made, as it is rational (Hamilton 1992, Bowers 1997, Speth 2008) to maximize the machine (which is also a product).

The machines can be improved, and the products produced by the machines can also be improved. What is produced can also be improved, thus adding to the progress (Hamilton 1992 Princen 2005) of humankind, often through linear and progressive change (Bowers 1997).

Where the resources come from tends to come second to the product. The focus is upon the product, not whether the materials are renewable or non-renewable, reflecting anthropocentric (Bowers 1997, Speth 2008) thought in a dualist manner.

The products are available to all, and at the moment. People work to obtain the products of the machine, and it is they who ‘own’ and ‘want’ the product. As it is the individual (Hamilton 1992 Bowers 1997) who consumes the product, egocentrism (Speth 2008) is encouraged. Consumer goods are consumed in the now, with little thought for the future, thus encouraging contempocentrism (Speth 2008). The assumption of people wanting to consume products suggests uniformity of human nature with regards to wants, and freedom to meet those wants (Hamilton 1992). This contributes to a culture of materialism (Speth 2008).

The machine is often located in a factory. The factory can also be seen as a machine. Factories exist in specific places, the nation. They contribute to the wealth of the nation, and their products are often distributed through the use of the market. National markets compete against each other for a share of resources and wealth. What was a good way to organise a factory has now become ‘a pervasive principle of social organisation’ (Princen 2005:13). The factory could be seen as a linked metaphor.

The values identified above can be organised within the domains (see figure 3.5.1). Sections 3.5.2 – 3.5.4 identify the domains and expand upon the key values of the Modern Social Imaginary. The spatial domain was identified as being national, and to this can be linked materialism and anthropocentrism.

Table 3.5.1 Root metaphor of the Modern Social Imaginary and values

<table>
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<td>The machine is often located in a factory. The factory can also be seen as a machine. Factories exist in specific places, the nation. They contribute to the wealth of the nation, and their products are often distributed through the use of the market. National markets compete against each other for a share of resources and wealth. What was a good way to organise a factory has now become ‘a pervasive principle of social organisation’ (Princen 2005:13). The factory could be seen as a linked metaphor.</td>
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<td>The values identified above can be organised within the domains (see figure 3.5.1). Sections 3.5.2 – 3.5.4 identify the domains and expand upon the key values of the Modern Social Imaginary. The spatial domain was identified as being national, and to this can be linked materialism and anthropocentrism.</td>
</tr>
</tbody>
</table>
The temporal domain was identified as contempocentric, and to this can be linked egocentrism and materialism. The ontological domain was identified as anthropocentric, and this can be linked to an epistemology that contains reductionism, rationalism, materialism and progress.

3.5.2 The Spatial Domain

Nationalism

Steger (2009a) sees the Modern Social Imaginary as being nation based. There is ‘a tight connection between the forces of modernity, the spread of industrial capitalism, and the elite-engineered construction of the ‘national community’ as a cultural artefact’ (Steger 2009a:8). Although Communism and Fascism had differences with capitalist-democratic states, all relied upon the will of the people (however interpreted) and all worked within a national framework (Steger 2009a: 9).

In the Modern Social Imaginary, Nationality and the nation-state are the definers of identity and allegiance, with many people not able to see beyond the
Nation. There was a move away from monarchs, aristocrats and clerics ruling, as in the Pre-modern Social Imaginary, to the ‘people’, who would transform from subjects into citizens (Steger and James 2013), who claimed ‘equal membership in the nation and institutionalised their sovereignty in the modern nation-state’ (Steger 2009a: 7).

**Materialism**

Borders and boundaries, holding onto land, are all aspects of the materialism to be found within the temporal domain. The nation is imagined (Anderson 1991), but part of that imaginary is the physical area of the nation, along with the emotional attachment to that (the English landscape, la France profonde, the Australian outback, the American West) which makes up part of the national identity.

**Anthropocentrism**

The borders of a nation, what Steger and James (2013:20) term ‘demarcated bounded territories’ are human ones; they are made up. There is a fiction to maps that are not to do with geographical features or ecosystems, but where people of a particular nation are (Monmonier 2005). These can change as the nation changes, or as disputes arise. A map of India will show Kashmir in India. A map of Pakistan will show Kashmir in Pakistan (Monmonier 1996). The nations of Africa were drawn on a map in Berlin in 1884-85 overlaying indigenous groupings.

### 3.5.3 The Temporal Domain

**Contempocentrism**

In the Modern Social Imaginary time is now, with little regard to the future, no intergenerational thought, which develops ‘the habit of thought that discounts the future in favour of the present’ (Speth 2005:138). It is what Steger and James (2013:20) call ‘calendric time’. The focus upon consuming and having emphasises the now. The focus upon economic growth emphasises short-term thought and action over the long-term, and sees consequences as immediate, as ironically does representative democratic rule.

**Egocentrism**
In the Modern Social Imaginary there is a focus upon the individual, and meeting the individual’s needs, on autonomy and the freedom to do as you wish, having and exercising your rights. This makes the individual the lowest social unit (a reflection of reductionism) and ‘leads to thinking of intelligence, creativity, and moral judgement as individual attributes’ (Bowers 1997:7). It is the individual who possesses self-consciousness, and thus those things that do not possess this are inferior, linking egocentrism to anthropocentricism (Hempel 1996).

**Materialism**

Materialism is ‘an approach to life and social wellbeing that elevates the material conditions of life over the spiritual and social dimension’ (Speth 2008:147). It is a secular view. Through this there is ‘the belief that production, consumption and the improvement of the material conditions of life are the goals of both the individual and society’ (Oliver and Gershman 1989:79), and this requires the immediate satisfaction of needs, linking to contempocentrism.

### 3.5.4 The Ontological Domain

**Anthropocentrism**

In the ontological domain a dualist ontology is developed (Hayward 1994) which separates humankind from nature, what Schmidt (2007:4) calls ‘generalised denaturalization’. Humankind is seen as being apart-from nature, not a-part-of nature (Speth 2008) with an anthropocentric view of human domination being developed. The ‘anthropocentric change in the conditions of belief as a process of maturation and growth, as a “coming of age” and as progressive emancipation’ (Casanova 2008:1) meant a rejection of the religious, and its replacement with the secular. Humankind was now the centre of the universe, relying upon their reason to solve problems both scientific and cultural.

Through the dominance of science and economics, humans create wealth ‘derived from the man-made world’ in order to ‘maximize all benefits’ and through that their ‘welfare and … wealth, which leads them to ‘maximize economic development or progress’ (Goldsmith 1996:xi). This leads to what Taylor (2010:10) identifies as the ‘triumph of an individualistic view of the
domain of autonomy and a rationalist, utility maximising, view of human nature’. This leads to a belief that nature belongs to humanity. This allows humankind to see the world as a resource to be used as humans see fit, having only instrumental value in the meeting of human needs. It leads to ‘a self-confident belief in the human ability to dominate nature’ (Speth 2005:138). The world becomes a store of resources for humankind to use as it wishes and human ingenuity will solve problems, and keep producing goods for use.

The Modern Social Imaginary has an ontology that sees has exceptional, in that humans are apart-from, different to, and superior to, all other life forms. Through this the world and its resources are seen as being provided for the sole use of humankind: there is a disconnect between human experience and the natural world. As Oliver and Gershman (1989:138) point out

‘Modernity recognizes two domains: material nature and human mind. Nature is assumed to be governed by a complex set of laws. Human mind can come to know these laws, and through this knowledge, to control and manage nature for the benefit of humans and nature alike’.

An anthropocentric perspective suggests that humankind shape their own future (Zufiaurre 2007), enabling humanity to establish’ itself as the measure of reality and [take] responsibility for its own destiny’ (2003:127). The anthropocentric focus gives rise to an epistemology that is derived from seeing humankind as this ‘measure of reality’. This is an epistemology based upon rationalism, reductionism, materialism and progress.

Rationalism

Princen (2005:24) argues that through the domination of ‘economistic and legalistic thought’, science and law have become the basis of contemporary rationality. This, he suggests, is mechanistic and reductive, predictive, measurable, controllable, and through this humankind can change the world to suit themselves. This type of rationality favours the mind over other ways of knowing, separating the mind from body and nature (Capra 1982), preferring the intellect over other ways of seeing the world. This linear way of thinking tends to ignore complexity, or things that work in a nonlinear manner. The dualism seen in anthropocentric thought is also seen here, with objective
knowledge being ‘the only real way of knowing and experiencing the world’ (Oliver and Gershman 1989:76), with a consequent rejection of subjective experience.

**Reductionism**

The investigation of matter through reason, empiricism and the scientific method leads to reducing matter to its smaller parts, a reductionist approach (Capra 1982). Through this, as Oliver and Gershman (1989:18) state, humankind comes ‘to see the world as bits of information relating to discrete problems, which can be understood through rational analysis’.

By reducing things down to lesser parts there is a tendency to isolate them, and then miss how they fit together. It leads to the study of phenomena in isolation. Studying phenomena in isolation leads to a fragmentation of knowledge, and the specialisation of study, with a resulting specialist language (Capra 1982). This also puts quantitative over qualitative. Also implied within this approach are the expert and the planner, again, a reflection of linear thought.

**Materialism**

The outlook is materialist, both in that all that exists is matter, and that progress is measured in increasing material objects.

**Progress**

The perspective of the Modern Social Imaginary assumes that ‘the naturalistic description of how human life evolved here on this planet also explains the underlying purpose and meaning of that life’ (Oliver and Gershman 1989:85); that humankind is here for its own benefit, and that progress is the telos that drives that. In this way human teleology is to constantly improve and progress. What once applied to ideas has now become applied to things, so that “more is better”, leading humans “to act as if there is never enough and never too much” (Princen 2005:11). It is ‘the belief in unlimited material progress to be achieved through economic and technological growth’ (Capra 1982:12). This also puts an emphasis upon linking change to social progress (Bowers 1997) with the consequent rejection of tradition and folk wisdom as inhibiting progress. It is knowledge derived from the scientific method that is most valued, linking progress to rationalism and reductionism. Growth is seen as a natural consequence of this, both in the quantity of goods produced, and the size of the
enterprise producing them (Oliver and Gershman 1989). This leads to what Sim (2010:80) calls ‘the ideology of constant material progress ’ in which there is ‘the promise of steady improvement with no foreseeable ending at all’ (Lasch 1991:47).

3.5 Conclusion

In the first part of the chapter (sections 3.1 – 3.3) the idea of the social imaginary was extended beyond the introduction in Chapter 2.3.1, by outlining in greater detail what a social imaginary was (3.1), the difference between imaginaries, ideologies and utopias (3.2) and how social imaginaries change through time (3.3). A social imaginary, it was argued, are the unstated and unarticulated ideas and practices that form the implicit background to everyday life, defining what is normal behaviour and thought at a particular time, operating chiefly through temporal, spatial and ontological domains. Ideologies sit within the social imaginary and are the explicit foreground, enabling people to state and articulate different ideas and practices, thus offering different ways to organise everyday life within the dominant social imaginary. Utopias, it was suggested, perform a different function, in that they begin to articulate alternative realities, which implies an emerging social imaginary. Having a dominant and an emerging social imaginary, allied to a fallible understanding of reality, implies that social imaginaries change through time. A model was developed which showed how the residual imaginary can still leave traces within the dominant social imaginary, and that at some time the dominant social imaginary may be supplanted by a nascent emerging social imaginary, as humankind’s understanding of reality changes.

The second part of the chapter (sections 3.4 – 3.5) then developed the ideas above to outline the current dominant social imaginary. This needed to be contrasted with the residual social imaginary, the Pre-modern Social Imaginary, which was based upon community in the spatial domain, transcendence in the temporal domain, and hierarchy in the ontological domain. The Pre-modern Social Imaginary was eventually supplanted by the Modern Social Imaginary, using the emerging ideas of the scientific revolution of the 17th Century, the Enlightenment of the 18th Century, and the practices arising from the French
and American revolutions, and the Industrial Revolution. The current dominant social imaginary, the Modern Social Imaginary, was identified as contempocentric in the temporal domain, national in the spatial domain, and anthropocentric in the ontological domain. The root metaphor was identified as mechanicism, epitomised by the machine. This gave rise to a number of values:

<table>
<thead>
<tr>
<th>Time</th>
<th>Space</th>
<th>Ontology</th>
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<tbody>
<tr>
<td>Contempocentrism</td>
<td>Nationalism</td>
<td>Anthropocentrism</td>
</tr>
<tr>
<td>Egocentrism</td>
<td>Anthropocentrism</td>
<td>Reductionism</td>
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<tr>
<td>Materialism</td>
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<td>Rationalism</td>
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<td></td>
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<td>Progress</td>
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</table>

Table 3.6 Domain and values ladders

It was through the enacting of these values that a new normal was created, leading to the ‘general human tendency to regard the only world [humans] know as normal’ (Goldsmith 1996: xiii), with it being difficult to think outside of the normal. All of this is based upon what Princen (2010:10) terms the normal of the Modern Social Imaginary, which is ‘the belief that endless expansion on a finite planet is possible, that there is continuous cheap energy, consumer demand is king, risks can be managed and economic, technological and demographic growth will solve all problems’. The dualistic ontology found exemplified by an anthropocentric perspective can lead to human exceptionalism. This exceptionalism comes from the application of reason, which, when allied to empiricism and scientific method, suggest that humankind can eventually know all there is to know and to use this knowledge to control and predict the world around them. Reason, empiricism and scientific method also release humankind from religious control, leading to a secular perspective. Reason resides within individuals, and to investigate scientifically through reason and empiricism suggests freedom and toleration. All of this is brought to bear upon progressing the human lot (Hamilton 1992, Rundell 2001).

Having identified, in Chapter 2, education as being a key means in which the social imaginary is formed, legitimated and perpetuated, Chapter 4 looks at the purposes and form of education within the Modern Social Imaginary.
Chapter 4: Education in the Modern Social Imaginary

In Chapter 3 the key elements of a social imaginary were identified, and in particular, the dominant social imaginary, the Modern Social Imaginary, was outlined in detail. As was mentioned in Chapter 2, the education system plays a large role in the development of the Modern Social Imaginary. This chapter examines the purposes and forms of education within the Modern Social Imaginary. A brief overview of the move from pre-modern to modern education will be given (4.1), and then the philosophical purposes (4.3), the political and economic purposes (4.4) and the form of education (4.5) within the Modern Social Imaginary will be examined. Finally education in the Modern Social Imaginary will be analysed in the context of the domains (4.6).

4.1 Overview of education in the Pre-modern Social Imaginary and the Modern Social Imaginary

Education in the Modern Social Imaginary grew out of 17th-Century Europe, the Enlightenment, and the nation states (Jarvis 1997, Hornberg 2009) which began to develop at this time. This meant a move from seeing education as a family concern, to one that moved it into the public domain (Ramirez and Ventresca 1992:51), based upon a set of values such as reason, empiricism, science, universalism, progress, individualism, toleration, freedom, uniformity of human nature and secularism (Hamilton 1992).

As education moved from the ‘voluntary and particularistic modes’ (Green 1990:79) of learning in the Pre-modern Social Imaginary, the state began to involve itself and schooling was developed as the main way in which learning took place (Green 1990, Meyer et. al. 1992, Anderson-Levitt 2005). This was because ‘the main premise underlying the spread of schooling was the belief in progress and modernity—the idea that through rationality, objectivity, the control of nature, and standardization, human societies were resolutely headed in a better direction’ (Arenas 2007:168).

It was the emergence of a national system of schooling run by the state that gave education within the Modern Social Imaginary its distinctive nature.
There had been schools before, but these were often run by the church, charities or voluntary organisations, which by their nature were local, or by guilds, which were trade specific. It was through the development of a national schooling system that there was a

‘fundamental and long-term restructuring of the Western cultural framework, a reordering of public life around territorial nation-state and individual citizenship principles that would transform transnational masses into national citizens’ (Ramireez and Ventresca 1992:50).

The ideas of the Enlightenment were progressed through schools, which were organised by nation-states.

Through the time of the Modern Social Imaginary, the scope and purpose of the schooling system has changed. In broad terms the scope has moved from educating a small number to schooling all, and in purpose from preparing a small group to rule the country and empire to ensuring that the whole population could contribute to the economy of the nation (Kemmis 1998). Trow (1973) charts how higher education developed over time. This analysis can also be extended to school systems, but within a longer time frame. For Trow (1973), as education systems develop over time, they move from an elite system, which educates less than 15 per cent of the population, to mass, which educate between fifteen to fifty per cent, and then finally to universal systems, which educate over fifty per cent. As the system develops and expands, to meet rising demands for education, the role of the systems changes. The elite system, which focuses upon ‘shaping the mind and character of the ruling class’ (Trow 1973:7), ensures that only a minority have access to education. Those that have are those who are educated. As the system expands and moves into a mass system, the purpose changes to one that is concerned with preparing a broad range of elites (Trow 1973). These elites tend to be professionals, and the need for a wider range of specialists means that those occupying those positions come from a wider range of the population than the educated elite. Finally the system is expanded into a universal system, with access to all forms of education to everyone, to meet the demands of life in an advanced industrial society, with rapid social and technological change.
The elite system traversed the transition from the Pre-modern Social Imaginary to the Modern Social Imaginary. The Pre-modern Social Imaginary, as outlined in section 3.4.1, was based around transcendence in the temporal domain, community in the spatial domain, and hierarchy in the ontological domain. According to Kemmis (1998:287) this led to an education system that had a fixed, God-given view of knowledge; that had an education appropriate for fixed and stable social structures; was focused upon fixed occupations producing known products; had fixed language; and saw learning as the mastery of pre-determined forms. Within the Pre-modern Social Imaginary ‘learning was narrowly associated with specialized forms of clerical, craft and legal training, and existed merely as an extension of the corporate interests of the town, the guild and the family’ (Green 1990:79). What educational institutions there were educated a very small bureaucratic and religious elite (Cowen 1996) Kemmis (1998) portrays this as a cycle, in that there is repetition and no change, with people being enculturated into a fixed position.

The change into the Modern Social Imaginary, which was based upon a contempocentric view of time, the nation as being the spatial frame, and ontologically anthropocentric, meant a corresponding change in the education system. Knowledge was now about going ‘deeper’, about not accepting it as a ‘given’. People were being emancipated through learning, enabling them to engage in different forms of life as scientific and technological progress was being made (Kemmis 1998). From this came the view that knowledge was ‘an objective phenomenon which could be tested through logic, empiricism or pragmatism’ (Jarvis 1996:236). Kemmis (1998) uses the image of the spiral to portray education in the Modern Social Imaginary, but perhaps a ladder is a better educational metaphor (Green 1990, Goheen 2000, Spring 2006) as humankind progresses by incremental steps, each step progressing to a better world of enlightened subjects (Kemmis 1998).

<table>
<thead>
<tr>
<th></th>
<th>Root metaphor</th>
<th>Educational metaphor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-modern Social Imaginary</td>
<td>Chain</td>
<td>Cycle</td>
</tr>
<tr>
<td>Modern Social Imaginary</td>
<td>Machine (mechanicism)</td>
<td>Ladder</td>
</tr>
</tbody>
</table>

Table 4.1 Root and educational metaphors
4.2 Education in the Modern Social Imaginary

Schooling as the main form of education within the Modern Social Imaginary came about through the growth of the nation-state (Green 1990, Meyer et. al. 1992, Cowen 1996, Anderson-Levitt 2005) and ‘mass education was one of many institutional developments which exemplified the steady march of progress and civilization’ (Green 1990:28). This happened at different rates in different countries – Prussia 1780-1840, France 1806-1882, USA 1830-1865, England 1839-1902 (Green 1990), eventually becoming the dominant form of educating the nations populace, although this was very much, and still is, an uneven process (Cowen 1996). Robertson and Dale (2008) point out that through this movement there was a conflation of education with schooling, particularly with nation-state schooling. There has also been a global growth in the use of schools to educate the national populace, to the point where schools have a similar form throughout the world (Ramirez and Ventresca 1992, Meyer 2009, Hornberg 2009). All schools have a national purpose, with a global form. Sections 4.3 - 4.5 will discuss the ways in which schools, being synonymous with education in the Modern Social Imaginary, are similar in purpose and form.

4.3 The purpose of education in the Modern Social Imaginary – philosophical

In Chapter 3 the key elements of the Modern Social Imaginary were outlined. Within the Ontological Domain anthropocentrism was identified as the key aspect, along with reductionism, rationalism and progress. Within this section it will be argued that the first purpose of education in the Modern Social Imaginary was to promulgate the ideas of the Enlightenment. This will be done by looking at how the underlying epistemology of the Enlightenment was developed within schools, how schools can be seen as machines, and therefore whether schools can promote liberation.
4.3.1 Schooling and epistemology

Anthropocentrism makes a distinction between humankind and nature; it is this dualistic thought that is typical of the Modern Social Imaginary. Dualism distinguishes between two aspects, and tends to favour one over the other (Plumwood 2002). Descartes made a dualism between mind and body, and the mind has been dominant since, leading to ‘the superiority of mental work over manual activities’ (Arenas 2007:176). The either/or logic of analytical thinking (LeFay 2006:37) identified other dualisms, such as science/superstition, reason/nature, matter/spirit, culture/nature and civilized/primitive. In the thought of the Enlightenment, the former was preferred over the latter.

Sterling (2002:6) identifies the key ideas underpinning the epistemology of the Enlightenment, and how they are manifested within the education system. He states that ‘these ten interrelated assumptions can be [seen] as [the] basic habits of thought that characterize modernist thinking’ (Sterling 2002:6).

<table>
<thead>
<tr>
<th>Ten assumptions of modernist thinking (Sterling 2002:6).</th>
<th>Modern Social Imaginary values and some educational implications</th>
</tr>
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<tbody>
<tr>
<td>For ‘every problem, there’s a solution’.</td>
<td>This assumes that everything can be answered, and that there is certainty and infallibility to humankind’s knowledge. This stance is anthropocentric, in that human reason will prevail: there is an answer to everything, and everything can be known. This also implies progress, getting better. This can be seen in problem solving in schools, often with specific answers.</td>
</tr>
<tr>
<td>Something can only be understood by ‘breaking it down into its component parts’.</td>
<td>This leads to analysing everything, rather than synthesising, a form of reductionism. Teaching reading by phonics is a good example of this. Parts also imply materialism.</td>
</tr>
<tr>
<td>The ‘whole (of something) is no more than the sum of its parts’.</td>
<td>Again, teaching reading through phonics is a good example of this reductionism, as it assumes that the sounding out of constituent sounds of words is the same as reading, that meaning can be derived solely from sounds.</td>
</tr>
<tr>
<td>‘Most processes are linear and characterized by cause-</td>
<td>If something happened, what was the cause? It can reduce History to a story, of certainty about what happened and why. It can also lead to</td>
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</table>
effect’.

simplifying what are very complex processes. A particular form of **rationality**, enabling control and prediction.

‘Most issues and events are fundamentally discrete or may be regarded as such, and may be dealt with adequately in a segregated way’.

This can also lead to atomism, of not looking for connections or patterns, but isolating and studying key aspects on their own. This can be seen in University ‘programmes’ with a ‘modular’ structure. A form of **reductionism**.

‘It is advisable and ethically acceptable to draw the boundaries of one’s circle of attention or concern quite tightly’.

This leads to narrow boundaries being drawn between different disciplines, with studies being made from specific views. The discipline becomes more important than the object of study. This can be seen in subject-based curricula, where what is taught in one subject is made distinct from what is taught in others. It is efficient and **rational** to study parts in a **reductive** manner.

‘Objectivity is both possible and necessary to understand issues’.

Objectivism can be linked to **rationalism**. It is a stance that rejects subjectivism. This can be seen in the reluctance to teach explicitly about values.

‘We can define or value something by distinguishing it from what it is not, or from its opposite’.

This promotes dualism, a form of **anthropocentrism**, by engaging in either/or thought. Someone teaches the child or the subject; one studies the arts or the sciences; a subject is academic or vocational.

‘We can understand things best through a rational response — any other approach is irrational’.

The promotion of **rationalism** also leads to dualism. It is also a specific type of rationalism that promotes scientific or mathematical rationalism. Ways of thought that do not fit this are rejected, even though they may answer many questions. In this way Science and Mathematics are prized over other subjects, a form of **materialism**.

‘If we know what the state of something is now, we can usually predict future outcomes’.

This form of determinism enables the promotion of a way of thinking that emphasises control as well as predictability, linking it back to problem solving. Through this **progress** can be made.

<table>
<thead>
<tr>
<th>Table 4.3.1 Enlightenment epistemology and education values in the Modern Social Imaginary</th>
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<tr>
<td>Through this analysis there develops a link between Enlightenment thought, key values of the Modern Social Imaginary, and their manifestation within the education system.</td>
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</tbody>
</table>
4.3.2 Schooling as a machine

LeFay (2006) further identifies mechanicism as the root metaphor in the Modern Social Imaginary, with the world being treated as a machine. In this way everything could be ‘broken down into isolated, independent, indivisible and inert parts that could be studied separately and objectively to reveal the universal laws of nature’ and through this ‘it could be quantified, predicted, manipulated and ultimately controlled’ (LeFay 2006:37). Through this reductionist approach knowledge was divided into disciplines and then sub-disciplines, becoming more fragmented and specialised (LeFay 2006). Those subjects closer to the scientific method had a higher status than those that were not ‘empirical, rational, reductionist, atomistic, linear and analytical’ (LeFay 2006:37). Curricula reflected both the representation of knowledge as objective fact, with the teacher transmitting knowledge to pupils, and of a fragmented subject based programme of learning. This fragmentation meant the teaching of parts, not the perception of the whole picture (Arenas 2007). In this way was developed the ‘notion of a curriculum as a fixed body of knowledge or a linear pathway of instruction’ (Zufiaurre 2007:146).

These were separate but linked components, like a machine where the ‘student is the product to be developed, manufactured by machines (lessons) once they are provided with the raw materials (the curriculum)’ (Oliver and Gershman 1989:162) with the teacher as the operator, the technician (Bottery 2009). In this input-output machine the teacher feeds pre-defined and measured units (knowledge) into the machine which the student then reproduces (testing), producing predictable and controlled behaviour and knowledge (outcomes) (Oliver and Gershman 1989:178). Learning happens in a specific space (classroom), and lasts for a specific time (lessons). Each piece of time builds upon the previous, so that linear learning happens in linear time. All of this can be measured and quantified; it is efficient, as teachers ‘cover’ the curriculum, and ‘deliver’ lessons. All of this leads to a terminal point: the test, exam or certificate.
The Modern doesn’t see reality as a whole, but ‘as a set of technical fragments that will inevitably produce moral, aesthetic, and scientific progress for the human race’ (Oliver and Gershman 1989:9). This fragmentation is part of the reductionism within the Modern Social Imaginary. Linked to fragmentation is specialisation, so that different people perform different functions as specialists, that education can be reduced to curriculum, testing, special needs, teaching, pastoral care, and subjects for example, sometimes with different people being responsible for devising the policy, another set of people implementing it (Oliver and Gershman 1989). In England learning becomes the curriculum. The curriculum becomes a set of subjects. Subjects become programmes of study and attainment targets. Programmes of study are broken down into knowledge, skills and understanding for different age groups. Attainment targets are divided into levels. Programmes of study become medium term plans. Medium term plans become lesson plans. Lesson plans become learning outcomes.

4.3.3 Schooling and liberation

LeFay (2006) argues that whilst the education system now is less reflective of its industrial inception, the underlying assumptions of the machine, that humans can control precisely, break down each part and function, see knowledge as facts to be absorbed, means that there is little thought given to challenging current power structures. Instead, he suggests ‘the core lessons being taught in our schools today are individualism, consumerism, careerism and anthropocentrism’ (LeFay 2006:39). As these are some of the core ideas of the Enlightenment, and as the purpose of schools within the Modern Social Imaginary is to form, legitimate and perpetuate that way of thinking, it should not be surprising that it is so. As LeFay states,

‘As mechanism shaped education, so did education become the primary means of disseminating the mechanistic worldview, creating a monumental positive feedback loop that continues to this day, to reinforce mechanism and perpetuate the model of mechanistic education’ (LeFay 2006:38).
Green (1990:31) points out that ‘empiricism, rationalism and emancipation’ were the fundamentals of enlightenment educational thought, but not the fundamentals of national education systems. In liberal states such as the USA and England, the enlightenment ideas of equality, freedom and democracy led to the formation of state education systems. In the USA it was both democratic and economic; it socialised people into both the Republic and capitalism (Green 1990). As can be seen from Hamilton (1992), Sterling (2002) and the analysis in section 4.3.1, many of the key Enlightenment ideas are promulgated through the education system.

The expansion of schooling to previously excluded groups was paradoxically both a constraining and a liberating exercise. It constrained as those being schooled were exposed to the ideas and mores of the dominant classes. It liberated, because to understand the dominant ideas and mores meant being able to read and write; once able to read and write, a person can read anything and write what they wish. It socialises the individual into a mode of behaving and thinking, but it also gives the individual the means to transcend that mode of behaving and thinking. Individuals can exercise agency in the middle of structure.

It could liberate, but this was not its main purpose; it is at this point that the spatial and ontological aspects of the Modern Social Imaginary are in tension. The focus upon liberation was meant to liberate the individual from the constraints of religious thought, and to think for themselves using their own reason. This also meant that the individual could think beyond the parameters and limitations of the Modern Social Imaginary, and thus liberate the individual from the ideas that the education system was meant to develop. For Wright (2003:128) there was a tension between the constraining and liberating aspects of education, as the immediate needs of society overtook the individual’s need to think for themselves as ‘educators began to impose social change rather than empower citizens to take decisions for themselves’ leading to a rhetoric of rationality, freedom and reality based upon paternalism (Wright 2003). This idea of tensions within the Modern Social Imaginary is developed further in section 4.6.
4.4 The purpose of education in the Modern Social Imaginary – political and economic

The initial purpose of the education system within the Modern Social Imaginary was to form, legitimate, and perpetuate the nation-state that gave rise to it (Carr and Hartnett 1996, Green 1997). To do this meant the assimilation of non-elite groupings such as the working classes, ethnic groups, women and possibly immigrants, into both the nation-state, and industrial methods (Spring 2006). This was then extended to producing professionals, often from the non-elite groups, to run the rapidly expanding state. This was primarily a political enterprise, with some economic aspects. This linked to Trow’s (1973) mass education.

The political purposes of education were superseded by the economic purpose, and towards the latter half of the 20th Century the economic purpose became dominant (Green 1997) (see section 5.2). The purpose of education changed from allegiance to a particular nation-state to engaging with the economic purposes of the nation-state, from being a citizen to being a consumer. This linked to Trow’s (1973) universal education.

4.4.1 Forming, legitimating and perpetuating the state

The schooling system was a way in which the nation-state was both formed, and legitimated (Green 1997, Anderson-Levitt 2005). It constructed the national identity, and organised individuals so that social goods such as status, money and employment were distributed (Meyer et. al.1992). This was done by spreading ‘the standard form of the appointed national language’ (Green 1990:80), so that regional variations were subsumed into a common language. Often this was a reflection of the elite use of language, rendering other variations less acceptable. In some countries there was a need for a common language as immigrants were assimilated. Through the common language national literature would be promoted. The use of a common language also meant that it was easier to ‘forge a national identity and a national culture’ (Green 1990:80). This would be done through the teaching of the history of the nation. History was taught as ‘a narrative of national development and progress’
and to ‘shape the identities of their citizens’ (VanSledright 2008:110). Through textbooks there is ‘a focus on the nation-state as the carrier of meaning’, and a celebration of the nation’s achievements (VanSledright 2008:114). ‘The narrative voice traffics in freedom, progress and celebration of national development’ (VanSledright 2008:115) in an objective manner that denies alternative perceptions. The purpose moves from teaching history, to completing the textbook, the course, the syllabus. Contrasting history as taught in schools, with the work of historians, VanSledright (2008:121) suggests that school history is about ‘heritage consumption and collective memorialisation’, rather than using evidence to question assumptions. This is because its purpose is to socialise, not to promote history, to create myths not to question truths. It was through the creation of myths and heritage that patriotic values, aligning the citizen to the nation-state could be developed (Green 1990). The creation of citizens meant that people went from serving God to serving their country, and that education was part of the social regeneration of the nation (Green 1997). Schools became the means by which citizens are educated (Robertson and Dale 2008). In this way

mass education became a core component of the nation-state model. Its collective standardization celebrates the unified sovereignty and purposiveness of the collectivity (the state), its individual focus and universality enact the integrated and universal character of society (the nation of citizens), and its secularized culture defines the character of the nation-state as an enterprise that is designed to attain progress’ (Meyer et. al. 1992:131).

4.4.2 Assimilation

Having learnt the national language, read the national literature, been taught the national myths through history, realised the demands of being a citizen of the nation, and inculcated moral disciplines (Green 1990), various non-elite groups were now in a better position to understand the demands of living within the nation. In short, their national identity was developed within the schooling system, thus converting ‘uncivilised students into literate citizens’ (Zufiaurre 2007:148). Through this the non-elite groups were assimilated into the nation-state. The dominant culture and the ideology of nationhood were developed through schools, forging unity, and maintaining the ‘ideological
hegemony of their dominant classes’ (Green 1997:35). Schools were seen as ‘a powerful instrument for promoting loyalty amongst the people’ (Green 1990:79), and for assimilating immigrant cultures where they appeared.

It was not just the dominant culture that the non-elite groups were assimilated into. They were also assimilated into industrial methods. The school was structured as a factory, there to ‘foster attitudes and competences relevant to the world of work’ (Zufiaurre 2007:145). Time was seen as clock time; seconds become minutes which become hours which become days which become weeks which become months which become years. It can be measured, it is linear, it is regular, it is predictable, what Adam (1998:97) calls the ‘rationalised time of calendars and clocks’. It is not seasons, or lifetimes, or the time a plant needs to grow. Pre-modern time was vegetative, biological, familial, cultural, cyclical and mythic; Modern time was mechanical and corporate. All of this was reflected in the organization of the school, with set lessons, starting and finishing times, breaks, and terms. Pupils learnt the discipline of the clock. It meant that ‘a new consciousness of time arose in the mind of Europeans, caused by the convergence of scientific discoveries and technological inventions, a nascent industrialization, and a growing urbanization’ (Arenas 2007:186), and so schools were able to ‘generalise new habits of routine and rational calculation’ (Green 1990:80). The teaching of the three ‘Rs’, the necessary mathematics and literacy needed to work in a factory, reinforced this.

4.4.3 Producing professionals to run the state

As the functions of the nation-state increased, and as science and technology led to a wider range of industrial processes, so there was a corresponding need for a more highly qualified and educated workforce. The demand for bureaucrats, military personnel and industrial scientists was a further spur to the expansion of national education systems (Green 1997).

According to Perkin (1990:3) professions are ‘subject to specialised training and claim expertise beyond the common-sense of the layman’. This is because of ‘trained expertise and selection by merit’; therefore they are open to
all (Perkin 1990:4). As they are open to all, there must be a mechanism for selection: this being the education system. In order to obtain trained expertise there must be an education system. As other organisations were ‘incapable of providing universal provision without state assistance’ (Green 1990:3) it was left to the state to provide universal schooling. To develop a national education system teachers are required, who are accredited by the state. It is through the education system that professionals are produced, and the state controls the education system (Green 1997, Freidson 2001).

Professionals are those whose knowledge is ‘developed well beyond everyday knowledge and is mastered by a limited number of people’ (Freidson 2001:139). These experts are used to either form or legitimate the shaping of state power as ‘professionals and bureaucrats are the key instruments for translating policies into practice’ (George and Wilding 1994: 193). In order to raise the level of trust of professions meant that ‘the ultimate power to establish professionals is held by the state’ which means that ‘the specialised knowledge required to shape the power of the state into concrete administrative actions, rules and regulations governing the organisation of work stems from those who are qualified to do the work’ (Freidson 2001:141), that is, professionals. In this way ‘selected associations become formal participants in policy-making by state agencies or...are created by those agencies for that purpose’ (Freidson 2001:146). With professional status dependent upon the implementation of, and aiding in the making of, state policy, professionals ‘became part of the process of governing’ (Johnson 1995:9) and hence ‘part of the process of state formation’ (Johnson 1995:11). This status was ‘typically dependent on the sort of bargain an occupation has struck with the state – what is sometimes called its ‘professional mandate’ (Whitty 2006:3).

However, to justify the selection by merit and expert service based on long arduous training (Perkin 1990:117) there arose the need to convince the public that the service was vital and that the market needed controlling (Perkin 1990:378). The professionals ‘looked to the state as the ultimate guarantor of professional status’ (Perkin 1990:xiii). Thus ‘the notion that the development of public education systems can only be understood in relation to the process of...
state formation’ (Green 1990:77) can also be applied to public health, welfare and social security. The state is the only apparatus able to ensure that this is done for all citizens, and it is also a core part of the legitimacy of the nation-state (Bobbitt 2002, Cooper 2003), so that the ‘acceptance of the authority of professional experts went together with the consolidation of the authority of states’ (Evett 2003:405).

4.4.4 Schooling and the economy

As the nation-state became established ideologically, and run by trained professionals, with pupils acculturated into work-like discipline and morals, then the purpose began to change to one ‘ostensibly designed to encourage economic growth’ (Anderson-Levitt 2005:992). This came about as universal attendance meant that schools could begin to focus upon what Zufiaurre (2007:145) terms ‘the school-to-work nexus’. This was done through accreditation, life-long learning, vocational courses and the expansion of Higher Education.

According to Spring (2007:11) schooling performs two functions; to provide students with the skills needed to compete in the labour market, and to match students’ abilities with the needs of the labour market. This suggests that as the labour market changes, so does the education system. If all that is needed for the market is basic mathematics and vernacular language, then that, alongside the national allegiance aspects of the curriculum, is what will be taught. As the application of science and technology is applied to industrial processes, then there is a need to extend what is taught beyond the basics of literacy and numeracy. When these processes lead to a lesser reliance upon physical strength at work, and more upon intellectual abilities, then a further development is needed, as there is a move into the ‘knowledge economy’ in a post-industrial world (Cowen 1996, Jarvis 2001). This then leads to the extension of secondary education, and then University education, to all (Trow 1973). This has extended beyond the nation, as many University students now attend Universities in places other than their own country, and MOOCs and SPOCs enable learners to learn from Universities other than those in their own
country. The growth of commercial educational organisations, and the ‘opening up’ of educational ‘markets’ has also aided this (Jarvis 1996, Ball 2007). What can be seen here is a possible tension between the national and the global in the spatial domain regarding the early functions of education in the Modern Social Imaginary, and the later economic purposes. As the political/philosophical purpose is superseded by the economic, there are still residual vestiges of the earlier purpose with subjects such as music, art still being taught.

In the latter part of the Modern Social Imaginary, what Jarvis (1996:233) terms ‘late-modernity’, under pressure from ‘global markets, transnational companies and the rapid changes in information technology and international travel’ a global form of education began to emerge. This can be seen in the response of nations to PISA testing (Baird et. al. 2011) and to the ‘borrowing’ of initiatives from other countries. A negative response to a PISA test result suggests a change of some sort to teaching in order to improve the test position. Borrowing initiatives from other countries also implies a more common approach to similar problems. The purpose of all of this was to improve the country’s position economically, underpinned by the idea of the knowledge economy. As knowledge resides with the individual, there is a move to putting costs for education upon the individual, at the same time as national systems are fragmented and privatised. All of this suggests that in late-modernity there appears to be a shift in the spatial domain from the national to the global (Spring 2006).

4.5 The form of education in the Modern Social Imaginary

Over the time of the Modern Social Imaginary a common schooling system emerged, one that is found in most countries, especially those with an industrial and post-industrial base. In section 4.3 this was seen as part of the purpose of education systems, in that the nation-state used schools to form, legitimate and perpetuate the national identity and draw non-elites into the nation and its ruling political and economic ideology (Ramireez and Ventresca 1992). As the ideas and building of these institutions moved from Europe via Empires (Cowen 1996)
via global organisations such as the IMF and World Bank (Spring 2006), and
developed in other industrial countries, so a common form developed (Benavot et. al. 1991, Hornberg 2009, Meyer 2009) to bring about the philosophical (see section 4.3) and political and economic purposes (see section 4.4) of the state. For Meyer (2009:209) education ‘is a core and causal part of the cultural model of the modern society or nation-state’. It differs at the national level through what the young people are taught. Where they are taught has become standardised and global, what they are taught is national (Benavot et. al. 1991, Meyer 2009). Whilst schools as they are currently manifested originated in nation-states, as the world has increasingly globalised, then the format has become much more standardised and homogenised (Meyer 2009). There are now fewer gender distinctions, and most countries aspire to have universal enrolment for their young people.

4.5.1 Institutions and systems

Learning takes place in specific buildings that are built for that specific purpose (Meyer 2009). There are a number of institutions within a system (Benavot et. al. 1991, Anderson-Levitt 2005) such as nurseries, schools, colleges and universities. Usually there is only one educational system, although alternatives are sometimes allowed (Archer 1984) as long as they do not threaten the dominant system. This system is hierarchical, so that it becomes ‘an education system differentiated in terms of various levels of education and educational institutions ‘(Hornberg 2009:243), in which the ‘component parts were linked and complementary’, becoming ‘part of an ‘educational ladder’ (Green 1990:2). Until the latter part of the Modern Social Imaginary this system was provided, regulated and funded by the nation-state (Barr 2003), although towards the end of the Modern Social Imaginary it appears that the nation-state is reducing the amount of provision and funding, with private or quasi-private companies replacing that role (Ball 2007). The state’s role was generally governed by a Ministry of Education (Benavot et. al. 1991, Ramireez and Ventresca 1992, Anderson-Levitt 2005), who would oversee the provision, regulation and funding.
4.5.2 What was taught and how

The Ministry of Education would regulate what was taught within schools by devising a curriculum (Benavot et. al. 1991, Anderson-Levitt 2005, Hornberg 2009). The curriculum would reflect the nation, and the identity that the authorities wished to promulgate, a ‘regulated curricula’ (Green 1990:2). This would often be a fixed body of knowledge organised in a linear and graded fashion (Zufiaurre 2007), organised around subjects that focused upon human achievement (Anderson-Levitt 2003), thus transmitting a universal and ‘rational body of knowledge’ (Arenas 2007:169). This would be taught in the vernacular language (Arenas 2007), usually giving primacy to the written and print form of expression. This then gave a special status to textbooks, which reflected the curriculum, and defined the learning for the learners. This is a good example of standardisation and rationality, as

‘Over time, textbooks gradually displaced oral tradition and other forms of knowing and feeling that were not susceptible to be codified in book form. The printed document came to signify the reliable representation of observable events, and it replaced in importance the changing and undependable spoken word’ (Arenas 2007:174).

4.5.3 Who was taught and where

Schooling became compulsory for all children of a specific age-range, with legally enforced attendance (Ramireez and Ventresca 1992, Arenas 2007, Hornberg 2009). This became universal for both genders, and the age range would extend both to younger and older children. These children would be taught in what Anderson-Levitt (2005:992) calls ‘age-graded "egg-carton" classrooms’. This was seen as an efficient way to learn. The ‘age-graded’ children would generally be taught in classes of children of similar age, with schools focusing upon a specific age range (Green 1990, Meyer 2009). Within this there was a tendency to ‘associate progress through the stages with the typical or average age at which children reach each stage’ (Anderson-Levitt 2005:997). Within the classrooms children would be disciplined into a certain way of working and behaving, thus ‘the student’s body also became an important source of control. It became crucial to “discipline the body” to reach the highest level of efficiency’ (Arenas 2007:186). Spontaneity and the free
display of emotions was discouraged, and a social distance between teachers and learners was enforced (Arena 2007). This led to a narrow view of human experience (Oliver and Gershman 1989) both intellectually and emotionally, so that ‘intellectual and rational development was viewed as the pinnacle of learning, mathematics and science viewed as more important than other disciplines, a fragmented understanding of reality, and an appreciation of nature as an inanimate entity’ (Arenas 2007:187).

These children would be taught eventually by professionally trained teachers who were accredited by the state (Green 1990, Hornberg 2009). The way in which children are taught tends to be transmission, as fixed knowledge needs little investigation, and a common form of teaching arises (Jarvis 2001). Towards late-modernity the state has started to micro-define what good teaching looks like, a reduction of professional autonomy, and also a reflection of reductionism and efficiency.

4.5.4 The Individual

Although taught in schools in a class with similar aged children all learning the prescribed curriculum, learning itself was an individual and personal activity. Through testing, children could be monitored and controlled (Arenas 2007), with their progress assumed by the existence of a linear curriculum, and confirmed by their movement through it (Ramireez and Ventresca 1992). In this way the school can sort children by evaluating them as individuals (Anderson-Levitt 2005) and a ‘linear, graded curriculum makes it easy to judge individual children against one another according to their progress through the expected stages’ (Anderson-Levitt 2005:997). In this way learning is an ‘individualized rather than a collective experience’ (Arenas 2007:187). Specific accredited tests also credentialise the individual, as it is the individual who learns, who passes the exams (Jarvis 1997). In this way schools sort children through the credentials that they gain, rather than through other ways of sorting such as social class (Anderson-Levitt 2005). As these ‘education systems typically award governmentally authorized credentials in terms of certificates confirming school performance’. (2009:243), and it is these that enable entry to higher levels of
the system, again sorting children as they go. There is often a direct link to level of employment and level of education.

4.6 Conclusion

The analysis in sections 4.3-4.5 highlighted the purposes and forms of education within the Modern Social Imaginary. The purposes and forms would not necessarily explicitly exhibit the key features of the Modern Social Imaginary, as many are implicit. As stated in section 2.3, a social imaginary is often unstructured and inarticulate, how people ‘imagine their social existence (Taylor 2007:23), and this manifests itself in an understanding of the temporal, spatial and ontological domains.

Within the temporal domain, the Modern Social Imaginary is contempocentric, with egocentric and materialist elements. Contempocentrism can be seen through the focus upon forming and perpetuating the nation-state (4.4.1), and through the need to focus upon the economy. This is a project that needs continual reinforcement, and happens in the now. Economic production is viewed in the short-term, whether through stock market returns, or five-year plans. This is further developed by a view of time that disciplines people into the now, of constant demand to the clock (4.4.2) and which sees time as linear (4.3.2). Egocentrism is developed through looking at success as being achieved by the individual (4.5.4). As there is a move towards a ‘knowledge economy’, knowledge also resides within the individual (4.4.4). Through gaining credentials based upon their ability (4.5.4), individuals can then be sorted based upon their skills and economic demands (4.4.4 and 4.5.4). The move to an education based upon reading and writing (4.5.2) meant that learning became private, and thus the preserve of the individual. What was taught in schools had little to do with values or emotions, and emphasised materialism (4.5.3). This was reinforced by giving higher status to the rational subjects of science and mathematics (4.3.1 and 4.5.3), with a machine like approach to the organisation of the school, time and what was learnt (4.4.2.and 4.3.2).

In the spatial domain, the Modern Social Imaginary is based upon the Nation, with materialism and anthropocentrism. Forming, legitimating and
perpetuating the nation-state were seen as one of the core purposes of education in the Modern Social Imaginary, through the development of national school systems (4.4 and 4.5.1). This created and perpetuated a national identity (4.4.1) and a national allegiance (4.4.2) based upon a common language, history and literature (4.4.1). This was universally applied to all citizens (4.4.2 and 4.5.3). This then developed into being schooled for the national economy, which would compete against other national economies (4.4.4). Materialism was shown through the physical defining of the state, with borders and architecture that evoked the nation (4.4.1 and 4.4.2). Anthropocentrism was developed through what was taught, with a focus upon the national story, and the achievements of people from the nation (4.5.2 and 4.4.1).

In the Ontological domain, the Modern Social Imaginary is anthropocentric, with reductionism, rationalism and progress as key values. Anthropocentrism comes about through dualistic thought that sees a distinction between human and nature, and favours the former over the latter (4.3.1). This is reinforced through a curriculum (4.5.2 and 4.4.1) that focuses upon human achievement, and reduces the non-human world to parts (4.3.1 and 4.3.2), so that what was thought about, and how it was thought about, gave primacy to human activities. The promotion of certain aspects of human experience that could be subjected to rational analysis (4.3.1) meant rejecting religion and spiritual matters in favour of human reason. The focus upon the nation and the economy also meant that how humans related to each other reinforced anthropocentric thought (4.4.1 and 4.4.4). Reductionism can be seen through the primacy of science and mathematics, and the desire to understand how things are put together (4.3.2), which also focuses upon materialism, in that matter is the key focus of study. It is also shown in the organisation of learning, through curricular, subjects, modules, and many other forms of fragmentation and specialisation that permeate the schooling system (4.3.2 and 4.5.2). What was studied and how it was studied reflected a reductionist approach. This reductionist approach was further developed through rationalism. Knowledge can be broken down and thus understood, with control and prediction arising from this (4.3.1). A rational approach to organising schooling is also taken, with schools systems, textbooks and classrooms all reflecting an organised and
logical pattern (4.3.2 and 4.5.1 – 4.5.3), so that each part logically follows from, and builds upon, the previous part. Through this progress can be made, as learners move through the stages of instruction, with a curriculum of rational knowledge structured for learners to progress through, with testing validating the progress (4.5.3 and 4.5.4).

In section 4.3.3 it was mentioned that there were tensions within some aspects of the Modern Social Imaginary as far as applying the ideas to education were concerned. This reflects the danger of assuming that the patterns picked out in the analysis above are fixed, and will happen everywhere, in a pre-set pattern. The philosophical ideas of the Modern Social Imaginary, the political and economic purposes, and the form of schooling within the Modern Social Imaginary are not a fixed route. They can impact in different parts of the world in different ways and at different times. There may be tensions between the philosophical and political/economic purposes. There may be tensions between the national and the global, as was suggested in section 4.4.4. There may be tensions between the pre-modern and the modern, with some aspects of the pre-modern being retained, such as a Monarchy, or private schools. There may be a tension between national allegiance and the liberation of the individual. What appears from the analysis above is that whilst education in the Modern Social Imaginary can develop in different places in different ways and at different paces, there is enough evidence to suggest a common form and purpose. Having created a social imaginary that enables humankind to see the world in a particular way, and to create a world in that image, what might be the challenges of the 21st Century that that way of perceiving the world has led to?
Chapter 5: The major challenges of the 21st Century?

5.1 Introduction

In Chapter 3 the Modern Social Imaginary was outlined, the way of perceiving reality that has dominated initially European, and then World thought for the last three hundred years. The Modern Social Imaginary was temporally focused upon the present; it was contempocentric. Spatially it focused upon the national, and ontologically it was anthropocentric. In Chapter 4 the education system that formed, legitimated and perpetuated the Modern Social Imaginary was analysed, showing how the education system developed the ideas of national, contempocentric and anthropocentric thought, such that it was difficult to think beyond the nation, the now, and humankind. In this way, the education system can be seen as one of the key means in which the challenges faced by humankind are met. The challenges faced within the Modern Social Imaginary were to do with the relationship of humans to humans, about who got what and why. This chapter looks at the challenges to be faced by humankind in the 21st Century, and looks to see if they are of the same type as the challenges of the 18th – 20th Century. If they are, then the current Modern Social Imaginary should be able to meet those challenges. If, however, the challenges of the 21st Century will be different to those faced within the Modern Social Imaginary, then it may suggest that there is a need for an emergent social imaginary, to supersede the current dominant one. Consequently, if the Modern Social Imaginary cannot meet the challenges of the 21st Century, it would also suggest that the education ‘system’ would require a corresponding change: would an education system based upon the Modern Social Imaginary be adequate to meet the challenges that children growing up in the 21st Century may meet?

Are the challenges of the 21st Century national, focused upon now, and to do with humankind? This will be investigated by firstly looking at where humankind has arrived to at the beginning of the 21st Century (section 5.2): secondly by looking at the consequences of that position (section 5.3): thirdly the implications of this (section 5.4): and finally, a consideration of the challenges of the 21st Century, and where this may lead to (section 5.5).
5.2 The beginning of the 21st Century

5.2.1 The Fossil Fuel Age

Steffen *et. al.* (2007:614) argue that over the last three hundred years

‘Human activities have become so pervasive and profound that they rival the great forces of Nature and are pushing the Earth into planetary terra incognita. The Earth is rapidly moving into a less biologically diverse, less forested, much warmer, and probably wetter and stormier state.’

This they term ‘The Anthropocene’ and this is coterminous with the Modern Social Imaginary. If this were the case, then it would seem to have profound implications, not only for humankind, but also for all other life forms that share the planet. This *initially* suggests that the key challenges of the 21st Century are to do with humankind’s relationship with the planet upon which they live and depend. Within ‘The Anthropocene’ Steffen *et. al.* (2007) identify three stages of human activity that has cumulatively affected the planet. The first is The Industrial Era (ca. 1800-1945) when the use of fossil fuels to produce goods led to an expansion of industry. The second stage is what they term The Great Acceleration (1945-ca. 2015), with economies becoming global and wealth increasing. During the early part of this stage there is limited awareness of the environmental impact of human activity, but this increases towards the end of it, which leads, they suggest, to the third stage, Stewards of the Earth System (ca. 2015 - ?). This chapter deals with the impact of the second stage.

5.2.2 The Great Acceleration

The Great Acceleration after the Second World War by the ‘globalised industrial capitalist economy’ (Harris 2012:23) led to the domination of ‘the consumption-based Western way of life’ operating on a global scale with a rapidly growing human population (Steffen *et. al.* 2004:38). As the global economy has grown by a factor of four in the last 25 years, so 60% of the world’s major ecosystems have been degraded (UNEP 2012a: 90). Speth (2008:6) and others (Capra 1982, Goldsmith 1996, Princen 2010) argue convincingly that it is this economic activity that is leading to environmental deterioration. With the failure to cost environmental impact and to respect limits
and thresholds on natural goods (Brown 2009:18), human activity, it is claimed, is putting pressure on the Earth System, and these ‘could destabilize critical biophysical systems and trigger abrupt or irreversible environmental changes that would be deleterious or even catastrophic for human wellbeing’ (Rockström et. al. 2009:2): they are a threat to the life sustaining eco-commons.

For Commoner (1971:37) it is the extraction of materials, conversion into new forms and then discharged into the atmosphere that breaches the second law of ecology, that ‘everything has to go somewhere’, which is leading to anthropogenic environmental problems, including climate change, desertification, deforestation, ozone depletion, biodiversity loss, shortages of fresh water, depleted fisheries, persistent organic pollutants, hazardous and solid wastes, and air pollution (Chasek 2000: 427).

The graphs in figure 5.2.2 (Steffen et. al. 2004) show how as human population and wealth has increased, so has water usage, fertilizer consumption, CO₂ and N₂O emissions and species extinction also increased.
Figure 5.2.2 The impact of human activity during the Great Acceleration (Steffen et. al. 2004:132-3)

The Great Acceleration happened within an anthropocentric perspective, in that the expansion and globalisation of trade paid little regard to the impact upon the earth systems (Steffen et. al. 2007). Whilst it is rational and efficient to reduce costs, from an ecological perspective it is irrational to harm the thing that all life depends upon. The growth of consumer goods consolidated the focus upon the now, with no regard for how long finite materials may last, and the national economy, through GDP was the measure of success, through growth.

5.2.3 The Two Big Forces

With the demise of the Soviet Bloc, and the development of technology, the world economy underwent a further transition, leading to what Rischard (2002) terms the two big forces. The first of these, the New World Economy came about with a technological and an economic revolution. The technological revolution was the use of information technology (IT) enabling people to send and receive information quickly, and to store and access this information in vast quantities. The economic revolution came about due to the demise of the Soviet
Bloc, and there being no viable alternative to capitalism. This meant that most people now lived in market economies. There was a move from technology that transformed energy and materials, to one that transformed time and distance, and an economy that had to expand to survive, thus causing inequalities and using further resources (Rischard 2002:11).

The second of these forces was the Demographic Explosion. The growth of the human population, which is projected to be between 9-10 billion by 2050, will very likely have impacts upon climate change, resource depletion and biodiversity. It is also likely that an aging and urban population, putting all of the Earth’s support systems under strain, will compound this. If there is strain under the current system with 7.2 billion humans, what will it be like with 9-10 billion? Rischard (2002) notes that within both forces there are unprecedented stresses, and within the New World Economy there are unprecedented opportunities, especially for the creation of wealth, and improving health of many, but not all, of the human population.

5.3 The consequences of the Great Acceleration

If it is accepted that life on Earth as we know it is dependent upon certain conditions, and that those conditions are the ones present during the Holocene of the last 10-12000 years (Steffen et. al. 2011b), then it implies that any activity that threatens those conditions threatens life on Earth as it is presently constituted. Section 5.3 looks at the consequences of the Great Acceleration in order to see if human activity is affecting the planet in such a way that there may be dangers to life as it is at the moment, and thus to humankind. Sections 5.3.1 – 5.3.4 do this in a reductionist manner, by identifying four key elements, of population and its effects (Beddington 2009, OECD 2012), biodiversity (Steffen et. al. 2011b, OECD 2012, UNEP 2012b), climate change (Beddington 2009, Steffen et. al. 2011b, OECD 2012, UNEP 2012b), and resources and their use (Beddington 2009, OECD 2012, UNEP 2012b). Sections 5.3.5 and 5.3.6 integrate the four key elements in a more holistic manner, and section 5.3.7 looks at whether this constitutes global change.
5.3.1 **Population growth and its effects**

The human population of the Earth is currently 7.2 billion humans (UN 2013). Figure 5.3.1 shows projected population change in the 21st Century. If current fertility continues, then the human population may reach 27.5 billion (table 5.3.1a/a). This seems unlikely, but as it is very difficult to predict fertility rates over a long period, the UN (2013) uses a range of variants. They project that global fertility rates will decline from 2.53 children per woman to 1.99 (table 5.3.1a/e). Using this medium fertility variant the world’s population should rise from the current 7.2 billion to 10.9 billion in 2100 (table 5.3.1a/c). The lower fertility variant (half a child less than the medium) will see population reduce from 7.2 to 6.8 billion (table 5.3.1a/b). The higher fertility variant (half a child more than the medium) will see the population rise from 7.2 billion to 16.6 billion by 2100 (table 5.3.1a/d)

![Population growth graph](image)


Figure 5.3.1 Population of the world, 1950-2100, according to different projections and variants (UN 2013:1)

<table>
<thead>
<tr>
<th>Population change in the 21st Century</th>
<th>2013</th>
<th>2050</th>
<th>2100</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Constant fertility at 2005 – 2010 rate</td>
<td></td>
<td></td>
<td>27.5</td>
</tr>
<tr>
<td>b Low fertility (half child below medium)</td>
<td></td>
<td>8.3</td>
<td>6.8</td>
</tr>
<tr>
<td>c Medium Fertility</td>
<td>7.2</td>
<td>9.6</td>
<td>10.9</td>
</tr>
<tr>
<td>d High Fertility (half child above medium)</td>
<td>10.9</td>
<td>16.6</td>
<td></td>
</tr>
<tr>
<td>e Medium fertility Variant (children per woman)</td>
<td>2.53</td>
<td>2.24</td>
<td>1.99</td>
</tr>
</tbody>
</table>
Table 5.3.1a Population change in the 21st Century- fertility (developed from UN 2013. All figures billions)

With so many unknowns, being able to predict the likely population in 2100 is very difficult, with a range between 6.8-27.5 billion humans. Measuring the impact is difficult. Engelman (2013:9) states that ‘the more of us [humans] there are, the less of a share of any fixed resource, such as the atmosphere, is available for each of us to sustainably and equitably transform or consume in a closed system’. It would seem obvious that if there are more humans then there will be a need for more water, more food, which will impact upon land and sea use, and possibly greater use of fertilisers. Satterthwaite (2009:54) however, urges caution, because ‘If most of the growth in the world’s population is among low-income households in low-income nations who never ‘get out of poverty’, then there is and will be little connection between population growth and GHG (Green House Gas) emissions growth’. O’Neill et. al. (2010) suggest that population growth alone is not necessarily going to cause severe environmental change, and factors such as urbanisation, aging, changes in household size, where the increases are occurring, and increasing wealth need to be factored in, as these have differing effects (Martine 2009:23).

In 2008 over half of the world’s population was urban, with cities consuming two-thirds of global energy and producing 70% of GHGs (World Bank 2014). The numbers living in urban areas is likely to increase to 60% by 2030 (Beddington 2009), adding to the environmental effects. Smaller households, a result of urbanisation and increasing wealth, also have an environmental impact, as there is duplication of consumer goods and demand for more housing and water.

The major population increases are likely to happen in the developing world.

<table>
<thead>
<tr>
<th>Population change in the 21st Century</th>
<th>2013</th>
<th>2050</th>
<th>2100</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Population increase (medium fertility)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing countries</td>
<td>5.9</td>
<td>8.2</td>
<td>9.6</td>
</tr>
<tr>
<td>Developed countries</td>
<td>1.25</td>
<td>1.28*</td>
<td></td>
</tr>
<tr>
<td>b Extra 3.7 million in 2100 (medium fertility)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60+</td>
<td>1.6</td>
<td>1.99</td>
<td></td>
</tr>
<tr>
<td>15-59 age</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c Under 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing countries</td>
<td>2.8</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>Developed countries</td>
<td>258m</td>
<td>252m</td>
<td>240m</td>
</tr>
</tbody>
</table>
Table 5.3.1b Population change in the 21st Century – location (developed from UN 2013. All figures billions unless stated.) *mainly due to migration

In table 5.3.1b/a the population of the developing world increases from 5.9 to 9.6 billion, whilst the developed world remains static, although the profile is one of an aging population. In the developing world the profile is of a much younger population of working age (table 5.3.1b/d). In the developed world it will be a problem of fewer working age people having to support an aging population, whilst in the developing world it will be a problem of finding work for the younger population (table 5.3.1b/c.d.e).

Where the increases happen will also matter. India, China and the United States will have the greatest population increases, with India growing by ‘about 17 million per year, China by about 7 million per year, and the United States by about 3 million per year’ (Ryerson 2010:2). Table 5.3.1c shows the changing population profile of the four largest countries. USA, China and India are currently ranked as the first, second and tenth largest economies in the world (World Bank 2013). China may soon overtake the USA. What is important here is that as China and India grow, there is a good chance that their populations will increase in wealth, and as they do so the impact upon the environment will grow. If everyone lived as the average American does, then five Earth’s worth of resources would be needed (see section 5.3.7 for further explanation): China currently uses one Earth’s worth, and India 0.4. This suggests a huge increase in resources needed (see section 5.3.4) in a world that is currently using 1.4 Earths (Wackernagel 2014).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>2013</th>
<th>Country</th>
<th>2050</th>
<th>Country</th>
<th>2100</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China</td>
<td>1.386</td>
<td>India</td>
<td>1.620</td>
<td>India</td>
<td>1.547</td>
</tr>
<tr>
<td>2</td>
<td>India</td>
<td>1.252</td>
<td>China</td>
<td>1.385</td>
<td>China</td>
<td>1.086</td>
</tr>
<tr>
<td>3</td>
<td>USA</td>
<td>320m</td>
<td>Nigeria</td>
<td>440m</td>
<td>Nigeria</td>
<td>914m</td>
</tr>
<tr>
<td>4</td>
<td>Indonesia</td>
<td>250m</td>
<td>USA</td>
<td>401m</td>
<td>USA</td>
<td>462m</td>
</tr>
<tr>
<td></td>
<td>Cumulated %</td>
<td>44.8</td>
<td></td>
<td>40.3</td>
<td></td>
<td>36.9</td>
</tr>
</tbody>
</table>

Table 5.3.1c Projected populations of the four largest economies (developed from UN 2013. All figures billions unless stated).
This brings in wealth as a factor to be linked to population. If the developing countries start to reach developed country levels of wealth then it will have a serious impact upon the environment (Martine 2009), as ‘current levels of population growth cannot continue over the long run without endangering the sustainability of the planet, particularly if standards of living are to be improved for a growing population’ (Zlotnik 2009: 35). The impact of affluence and demographic changes means that ‘growing human populations are eating more meat, using more carbon-based energy, shouldering aside more natural landscapes, and tapping into more renewable and non-renewable commodities than ever before in history’ (Engelman 2013:13). This then impacts upon GHGs, and is an important driver of their growth (Satterthwaite 2009:61). This leads Satterthwaite (2009:50) to conclude that ‘the much-used formula of I = P*A*T (impact relating to population, affluence and technology) should be changed to I = C*A*T when applied to global warming impacts, with C being the number of consumers, not the number of people’. It is the level of consumption that matters, not the total population (see section 5.3.6), which poses threats to the Modern Social Imaginary, based as it currently is upon high consumption and constant growth (Martine 2009). Within the Modern Social Imaginary declining population is seen as a problem, whereas from an Earth perspective it is seen as a positive.

5.3.2 Biodiversity

Biodiversity is the variability of life within and between species as well as at the level of ecosystems, where

‘ecosystems are interacting systems of living organisms and non-living components in a defined area of any size. Organisms in an ecosystem interact with their physical environment, acquiring resources from it, influencing it through their behaviour and products, and being influenced by it’ (Royal Society 2012:63). The organisms interact with each other, compete, feed and cooperate. These interactions underpin the ecosystem (Royal Society 2012). Apart from being a home to many species, ‘biodiversity and ecosystem services provide food, medicines, fish and timber products as well as biomass, energy and water-related services that people need for their livelihoods and well-being’ (UNEP 2012a: 146).
The threats to biodiversity come from

‘land use changes (usually associated with increasing populations); unsustainable use and exploitation of natural resources (especially fisheries, agriculture, and forestry); global climate change; and industrial pollution. At the same time, biotechnology is introducing new organisms and their effect on existing organisms and habitats also needs to be considered’ (Gaudin 2008:14).

Freshwater ecosystems can be affected by dams, withdrawals and chemical changes caused by pollution and runoff. They can also be affected by the growth of algal blooms due to rising salinity and temperature. Ocean ecosystems are affected by warming acidification, and intensive fishing. Over fishing takes the top predators, plus other non-target species, and the sea floor is damaged by some trawls. Whilst this is in the short-term an economically efficient way to do things, in the long-term there are no fishes, so it is ecologically inefficient.

The effects of the combination of factors affecting ecosystems means that there are extinctions caused by land transformation (Vitousek et. al. 1997) which reduces locally adapted populations; in 1997 ‘11% of the remaining birds, 18% of the mammals, 5% of fish, and 8% of plant species on Earth [were] threatened with extinction’ (Vitousek et. al. 1997:498). By 2009 ‘21 percent of all known mammals, 30 percent of all known amphibians, 12 percent of all known birds, and 28 percent of reptiles, 37 percent of freshwater fishes, 70 percent of plants, 35 percent of invertebrates assessed’ were threatened with extinction (IUCN 2009). The World Wide Fund for Nature (WWF) have charted the decline of vertebrate species over the last 40 years, noting a population decline of nearly 52% (WWF 2014:16). Invasive species, and homogenising biota also affect biodiversity, with a loss of diversity as a few crops become mainstays, and humans rely upon a limited number of animal breeds (Gaudin 2008). With climate change there is plant migration as plants ‘can only survive, compete, and reproduce within the range of climates to which they are evolutionarily and physiologically adapted’ (Bergengren et. al. 2011:434). Biodiversity and climate change link within forests, as primary forests are more biodiverse, and sequester carbon.
Biodiversity matters because the rich variety of life is a result of all the interactions amongst living things and their life-support systems. A more biodiverse ecosystem is more resilient and resistant to threats than one that is less diverse. The decline of biodiversity is also a warning that human activity may be affecting the life conditions of the Earth.

5.3.3 Climate Change

Climate change can be looked at ‘in terms of climate sensitivity, the globally averaged temperature rise associated with a doubling of the atmospheric CO₂ (equivalent) concentration’ (Bergengren et. al. 2011:433). As mentioned in section 5.2.1, Steffen et. al. (2007) suggest that the climate is being changed by the build up of greenhouse gases, particularly CO₂, caused by the increasing use of fossil fuels and this affects the carbon cycle, and that this is due to human activity (World Bank 2012).

The amount of CO₂ in the atmosphere has been increasing since humans began using fossil fuels, but again has taken off rapidly since the end of the Second World War. The preindustrial concentration of CO₂ was 278 parts per million (ppm). This has risen to over 391 ppm in September 2012. This is its highest for 15 million years. The emissions of CO₂ will continue to rise (World Bank 2012).

This is important, because CO₂ is one of the key greenhouse gases (GHGs). As the CO₂ builds up in the atmosphere, it reduces the loss of infrared radiation into space. This causes the Earth to heat up, thus the man-made greenhouse effect supplements the Earths natural greenhouse effect, which keeps the Earth at a stable temperature.
This accumulation of gases and the subsequent retention of infrared radiation are being linked to the rising temperature of the Earth, as can be seen in figure 5.3.3.a.

Other greenhouse gases such as sulphur dioxide from energy and transport (UNEP 2012a: 41) lead to ocean acidification, and nitrogen compounds from energy and food production lead to the nitrogen cascade, with effects upon biodiversity and health (UNEP 2012a: 44). Particulate matter through emissions and pollutants also has an impact upon human health. Tropospheric ozone is the third most important greenhouse gas after CO₂ and methane (UNEP 2012a: 49) and surface ozone, which is caused by other pollutants, affects human health and ecosystems. CFCs and lead in petrol have been reduced, but black carbon, methane and tropospheric ozone continue to rise. The latter three are short-term gases within the atmosphere.

The chances of limiting a 2°C rise in temperature seem to be receding as ‘stabilising atmospheric carbon dioxide concentrations at 450 ppm, according to broad scientific consensus, will give the world a 50% probability of limiting warming to 2°C above pre-industrial levels’ (PWC 2012:2), with a 20% likelihood of 4°C by 2100 (World Bank 2012). Carbon intensity has decreased by 0.7% at the moment; to keep to a 2°C rise would mean cutting carbon by
5.1% every year until 2050, something that has never been done before. It appears to be ‘highly unrealistic’ (PWC 2012:2, World Bank 2012). Scenarios are now being developed that look at 4°C and 6°C rises.

Table 5.3.3 shows the possible temperature rise based upon different rates of decarbonisation.

<table>
<thead>
<tr>
<th>Average annual rate of global decarbonisation to 2050 (%)</th>
<th>Implied concentration levels, approximate ppm CO$_2$e</th>
<th>IPCC ‘best guess’ of average global temperature increase above pre-industrial levels, rounded to nearest °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6%</td>
<td>1,200 ppm</td>
<td>6°C</td>
</tr>
<tr>
<td>3.0%</td>
<td>750 ppm</td>
<td>4°C</td>
</tr>
<tr>
<td>4.5%</td>
<td>550 ppm</td>
<td>3°C</td>
</tr>
<tr>
<td>5.1%</td>
<td>450 ppm</td>
<td>2°C</td>
</tr>
</tbody>
</table>

Table 5.3.3 Temperature rise and decarbonisation (PWC 2012:9)

Evidence taken from the Antarctic Ice Core show the levels of carbon dioxide and methane in the atmosphere over the last 800,000 years (see figure 5.3.3b). There is a strong correlation between the levels of the two greenhouse gases and the Earth’s temperature. Methane has a comparative impact of 20 times greater than CO$_2$ (EPA 2014). What the core data also show is that the levels of the gases and the temperature of the Earth have stayed within a specific range over the last 800,000 years: until now. It is this breaching of those limits that is potentially dangerous, as life as we know it has evolved within those limits. The implications of this are unknown (see section 5.3.5 Planetary Boundaries).
Figure 5.3.3b Antarctic Ice Core data (Seitzinger 2011)

What this doesn’t show, and cannot, is where the threshold is, what the tipping point is, and the ramifications of this (see section 5.3.5). There is a danger of seeing climate change as a linear process, where boundaries can be identified and calculated. Lenton (2009) warns of ‘tipping points’, where different combinations of elements come together to rapidly change things, what he terms ‘abrupt climate change’.

Figure 5.3.3c shows the different temperature rises dependent upon the interaction of population, economic growth, energy use and ability of technology to ameliorate the effects of rising CO$_2$ levels. Again, this shows the complexity of trying to predict the effects, as so many variables are concerned. This is before the possible tipping point is reached, as this is currently unknown.
The greater the rise in temperature, the greater the risk to life as it is presently constituted and the greater frequency of extreme weather, the greater the likelihood of rising sea levels and loss of land, and a consequent impact upon ecosystems. The implications of this in a ‘world in which warming reaches 4°C above preindustrial levels …would be one of unprecedented heat waves, severe drought, and major floods in many regions, with serious impacts on human systems, ecosystems, and associated services’ (World Bank 2012:xiv).

Given the albedo effect, where light is reflected back from the Earth by snow, there has been considerable concern for some time about ice melt and the results now support such concern. Rising temperatures may well cause the Arctic Sea ice to melt earlier and quicker, with a resultant rise in sea levels. This has two effects. Firstly a 4°C rise could lead to a sea-level rise of 0.5 to 1 meter,
whilst 6°C could lead to several meters rise. The impact will be 15-20% greater in the Tropics than the global mean (World Bank 2012). This would affect many coastal cities, with 135 million people being affected with a rise of 3 meters, and 300 million with 5 meters (Gaudin 2008). Summer melt from glaciers could also be affected having a particular impact upon China and India, covering some half of the world’s human population. Secondly, rising temperatures may also cause permafrost to thaw and then release stored CO₂ and methane, thus setting in train a positive feedback loop, causing more warming.

The effect of atmospheric warming makes plants susceptible to disease, insects and fires. This affects the animal population, and the change of land use by human action reduces ‘migrational resiliency ‘of plants and animals (Bergengren et. al. 2011:455). Higher temperatures may also have other impacts, in that they can ‘diminish crop yields, melt the mountain glaciers that feed rivers, generate more-destructive storms, increase the severity of flooding, intensify drought, cause more-frequent and destructive wildfires, and alter ecosystems everywhere’ (Brown 2009:59). Some parts of the world could be affected by drought (the Mediterranean and Middle East, central America and South Africa [but not middle Africa], Australia and the south of China) some by flooding (the north of Europe, Canada, Central Africa, The north of South America and the west part of China) as the weather becomes more extreme, and rainfall more irregular (Gaudin 2008). The possible rise in GHGs would warm the Earth more, rising sea levels may well lead to human migration, with a differential impact upon the developing world, and rising temperatures could well lead to plant and animal migration.

5.3.4 Resources and their use

It is important when looking at resource use of the effect of both rich and poor in their use of the resources of the Earth (Dunning 1992, Chasek 2000). The desire of the developing world to live a life like the developed world and the desire of the developed world to protect the resources needed to continue living the life they have impacts on both. If there is a desire to live a life that is based upon the extensive use of finite resources, then there must also be a commitment to the procurement and defence of those resources (Klare 2001).
This is due to ‘the escalating worldwide demand for commodities of all types, the likely emergence of resource scarcities, and disputes over the ownership of valuable sources of critical materials’ (Klare 2001:15). The impact of humankind on resources can be seen in many areas, particularly water, food, energy and land.

**Water –**

There is unequal global distribution of water, such that by 2025 three billion people may well have limited access to water, and many millions in cities will have no sanitation systems (EC 2009). The rising population and rising wealth will lead to greater demand for water, with supply possibly reduced by climate change.

According to Brown (2009), humans drink four litres of water a day, but ‘eat’ 2000 in their food as it is washed. This is before water that is used for washing. Urbanisation also creates demand for water and the need for infrastructure, as does rising wealth, which leads to the greater use of machines that use water and more bathrooms. This can lead to scarcity at a time of rising demand. The damming of rivers and the overuse of aquifers is also leading to water overuse, all of which can impact upon other species.

**Food –**

The rising human population also means that demand for food may well increase in demand from 40% in 2030 to 70% by 2050 (Royal Society 2012:60). Rising prices, less land and water, and an increase in biofuels may well cause food supply problems (EC2009). This may be made worse by how climate change may affect growing patterns, as may the increased use of land for biofuels and livestock production. Climate change may also lead to rising temperature and water shortages. As ‘higher temperatures can halt photosynthesis, prevent pollination, and lead to crop dehydration’ (Brown 2009:69) this has further implications for food supply. Agriculture is also based on petroleum inputs – for cultivation, spraying and harvest; for fertilizer; and for global distribution. Finally there are the pollution effects of how humans produce food, through the use of pesticides, fertilizer, animal feed and animal waste.
Fisheries exploitation means there has been a rise from 10% to 80% of fisheries being fully exploited. As wealth rises, so does the demand for meat, which requires more grain to use as feed.

**Energy –**

By 2025 demand for energy will have increased by 50%, with fossil fuels still providing 80% of the world’s fuel (EC 2009). Two-thirds of this increase will come from China, Russia and the USA (Gaudin 2008:31). This could take ‘CO₂ equivalent concentration in the atmosphere at about 550 parts per million’ (Gaudin 2008:32); to keep to a 2-4°C rise it needs to be at 450ppm. To even get to this would require a massive reduction upon current use (see section 5.3.3).

Smaller households lead to more resource and energy use as consumer appliances are replicated. Smaller families also mean more housing, which often happens in suburban areas, putting greater pressure on transport and land, with resulting pollution (UNEP 2012a).

Peak oil and possibly all fossil fuels will have an effect upon prices, but also possible conflict over resource acquisition (Klare 2001). The strategic importance of different nations according to their energy resources could change the geo-political outlook. There may be a move to biofuels, which has huge implications, as the reliance upon carbon has an effect upon production, jobs and sub-industries, and also the infrastructure that has been built to support this. A move to a different energy source would have a wider impact (UNEP 2012a: 25). There are also concerns as to whether biofuels can supply enough energy, and also

‘the direct environmental and social impacts of land clearance and conversion, the introduction of potentially invasive species, the overuse of water and the consequences for the global food market. An additional cause for concern is the purchase or leasing of land by wealthier nations to produce food and biofuels – typically in developing and sometimes semi-arid countries (UNEP 2012a: 15).

Currently wind, sun and water based renewable energy supplies just 3% of the world’s energy (UNEP 2012a: 15).
Land –

Population growth, urbanisation and changing diets are increasing demand for food and livestock feed, which is putting pressure on land use. Agricultural land given over to livestock has increased. Water shortages and land degradation are threats to food security, with competing demands of biofuel, fuel, feeds, raw materials and fibre for land use. It is this combination of factors that are leading to ‘land conversion, land degradation and pressure on protected areas. Climate change is placing additional stress on productive areas’ (UNEP 2012a: 66). The danger with this is that

‘Extending conventional agriculture into uncultivated lands requires mechanization to modify the surface, and supplements in the form of fertilizers, herbicides, pesticides and irrigation water. Excessive use of machinery and chemical supplements, however, breaks up soil structure, increases erosion, chemically pollutes soil, contaminates groundwater’ (UNEP 2012a: 69).

Forests are also under pressure from agricultural expansion, biofuel, urbanisation, and the demand for forest products. They are also under stress due to changing weather, with similar effects on grasslands and wetlands. In wetlands the conversion to agriculture releases CO₂ and nitrous oxide from peatlands, thus adding to climate change (see section 5.3.3).

Sections 5.3.1 -5.3.4 looked at each aspect individually, but it is the complex cumulative and unknown manner in which each part may influence the others that makes the current situation so potentially dangerous. Beddington (2010) has termed the impact that population, climate change, biodiversity and resources have upon each other as a “Perfect Storm Scenario’. To investigate how these are inter-connected, and how humankind has limited knowledge of how these interact, the idea of planetary boundaries and tipping points (5.3.5) and of the ecological footprint (5.3.6) will be used to integrate sections 5.3.1 - 5.3.4.
5.3.5 Planetary Boundaries and Tipping Points

For the last 10-12,000 years, the Holocene, the Earth has remained relatively stable, and this stability has enabled humankind and many other species to flourish. This state could continue for thousands of years if left unchanged, and offers current life on Earth what Steffen et al. (2011b:747) term as a ‘safe operating space’, the implication that to go beyond this ‘space’ is to enter a state different to that which current life has flourished in. However, the activities of humankind, especially since the Industrial Revolution, seem to have begun to effect changes that threaten the stability that humankind has relied upon. Furthermore, those activities are also threatening other life forms (Rockström et. al. 2009:2).

The idea of boundaries is tentative and uncertain because of lack of scientific knowledge about thresholds, how long it takes to reach or over-shoot a threshold, and uncertainty about the behaviour of complex biophysical processes. (Rockström et. al. 2009:3). This means that the science is developing, and at the moment is very provisional, as the methods are refined and tested.

In order to measure the effects of human activity upon the Earth system, Rockström et. al. (2009) developed the idea of planetary boundaries, an approach that ‘focuses on the biophysical processes of the Earth System that determine the self-regulating capacity of the planet’ (Rockström et. al. 2009:5). By identifying these boundaries they hope to be able to estimate ‘a safe operating space for humanity with respect to the functioning of the Earth System.’ (Rockström et. al. 2009:2). There are nine boundaries, seven of which are quantified; Stratospheric ozone layer, Biodiversity, Climate Change, Ocean acidification, Freshwater consumption and the global hydrological cycle, Land system change, Nitrogen and phosphorus inputs to the biosphere and oceans and two of which are not; Atmospheric aerosol loading and Chemicals dispersion. The importance of the boundaries is that

‘Transgressing one or more planetary boundaries may be deleterious or even catastrophic due to the risk of crossing thresholds that will
trigger non-linear, abrupt environmental change within continental- to planetary-scale systems’ (Rockström et. al. 2009:1).

Figure 5.3.5 shows the planetary boundaries. The inner two sections, shaded green, show the safe operating limits. The wedges, in red, show the ‘estimate of current position’ of the measures used, with the points showing the ‘estimated recent time trajectory (1950 – present) of each’ measure (Rockström et. al. 2009:22). Rockström et. al. (2009:22) suggest that humankind has already transgressed the climate change, biodiversity and nitrogen cycle boundaries. The problem is the uncertainty about the effects of crossing thresholds in different boundary areas.

![Planetary Boundaries diagram](image)

Figure 5.3.5 Planetary Boundaries (Rockström et. al. 2009:22)

The planetary boundaries approach is thus explicitly based on maintaining the Earth system in the Holocene domain, the environmental envelope within which contemporary civilization has developed and thrived (Steffen et. al. 2011a: 860). All current life on Earth, Rockström et. al. (2000) argue, has developed and evolved within the first two planetary boundary sections. It is this balance that has enabled the life-support systems to sustain life, as it is
currently constituted. To move outside of these boundaries may be to begin to change life, as it is currently constituted, and to possibly lead into unknown territory. This is further complicated by ignorance about how the different boundaries interact, and where the thresholds for each boundary are. It is this unpredictability that makes moving outside of the safe operating limits so potentially dangerous. These are also happening at a global level, and they affect all life. They are happening now, but will impact in the future.

5.3.6 Ecological footprint

The Ecological Footprint is an attempt to compare the use of resources amongst different populations. It calculates this by looking at how much land (measured in hectares) is needed to sustain a human population in its lifestyle, and how much land is actually available. The difference between required and actual land is the measure of un/sustainability. The higher the footprint, the more unsustainable the lifestyle is (Lenzen and Murray 2003). Through this ‘Ecological Footprints document the extent to which human economies stay within the regenerative capacity of the biosphere’ (Wackernagel et. al. 2006:104). This calculation is for humans only, and doesn’t take into account other species that may also require the land.

One benefit of this method is that it calculates (or attempts to calculate) the entire impact of an activity. Current economics ignores externalities, such as pollution or land loss when calculating cost; it is merely a monetary issue. The Ecological Footprint factors in all impacts. The ecological cost is of a different magnitude to the economic cost. Another benefit is it measures pollution and its impact globally, rather than treating what happens abroad as another externality, again contrasting current economic rationality against a contrasting ecological rationality.

There are criticisms about the use of the Ecological Footprint in that it can over simplify complex data, it aggregates numerous elements into a single measure, and it is difficult to actually measure productivity using land as a proxy (Lenzen and Murray 2003). It also only measures human impact, not how the land may also be required by other species. However simplistic though, it does
give a single measure that enables some form of comparison about resource use amongst populations. It is also a reminder that there are limits, and that how humans stay within them is a normative issue (Vanderheiden 2008).

Using this measure shows that the demands made on the natural world by humankind has doubled since the 1960s (WWF 2010). The rapid economic growth has led to resources demand that cannot be met within the country, so are being met by importing from around the world (WWF 2010). The WWF (2010:8) also identify the Earth’s biocapacity, ‘the area actually available to produce renewable resources and absorb CO2’ was exceeded by the footprint by 50% in 2007, that the carbon footprint has grown eleven-fold since 1961, and that 71 countries are experiencing water stress. They calculate that humankind will need two Earths by 2030 based upon modest projections and ‘business as usual’. Currently, with 7 billion people, if everyone lived within the lowest Footprint (Timor-Este), 0.24 Earths would be needed, and theoretically, living at that level the Earth could take 27 billion humans. Living at the highest footprint (the UAE) 6 Earths would be needed. To support a lifestyle like the UAE the Earth could only support 1.11 billion people (GFN 2010). As was discussed in section 5.3.1, consumption is a key factor here.

The Ecological Footprint suggests that human activity is affecting the Earth on a global scale. It also implies that if humans are using more than one Earth there must be a price to pay at some time, possibly the future, and in some place, probably the poorer parts of the globe. This raises issues of inter-generational fairness, and social justice for the poor. It also implies that the greater the human activity, the greater the impact on other life forms and life-support systems.

5.3.7 Global Change

Steffen et. al. (2004:4) make the important point that ‘global change is more than climate change. It is real, it is happening now and in many ways it is accelerating.’ There is a danger to concentrate upon climate change. Whilst this is undoubtedly important, there are other changes going on of a global nature that are just as important and just as potentially dangerous to life on Earth. To focus solely upon climate change is to risk thinking in a linear manner, of
looking at a single problem, and missing the complexity and interconnectedness of the problems facing life on Earth in the 21st Century.

The activities of humankind, if they continue with ‘business as usual’, suggest that humans may well be threatening their ‘basic goods and services supplied by the planetary life support system, such as sufficiency and quality of food, water resources, air quality, and an environment conducive to human health, [which] are all being affected by global change’ (Steffen et. al. 2004:23). There are corresponding ‘shortages of critical resources such as oil, water, and food’ (Raskin et. al. 2010:2626). These activities are also threatening the stability of the Earth System.

Figure 5.3.7 shows the interconnections of the drivers and effects leading to global change. The argument is that human activity is leading to global warming, which is caused partly through the depletion of fossil fuels resources. The growing wealth creates demand, which leads to further depletion of natural resources, including deforestation. Deforestation, caused by meeting the demands of rising wealth and the need for greater resources is leading to a loss of biodiversity. A loss of biodiversity is affecting bio-systems, which humankind depends upon. This threatens food security. Food insecurity means greater deforestation, which contributes to further global warming. Even in this simplistic form, the complexity of the situation can be seen, and this is before the possible consequences of all of this have been worked through. The problem is that humankind does not know what the impact upon the Earth Systems will be.
5.4 Conclusion – the Implications of the evidence.

This chapter has examined some of the evidence looking at human impact upon the planet. The suggestion that human activity may be leading to global change is important, because of the foundational truth outlined in Chapter 2, that all life and life-processes are dependent upon the Earth, and to harm those may lead to a change upon the planet, such that it could harm humankind and all other life. The human population is likely to rise to 9-10 billion by the end of the 21st Century. This, when combined with rising wealth and urbanisation could have an impact upon the environment (section 5.3.1). Rising wealth and urbanisation can impact upon other ecosystems, as humanity needs more food to feed a growing and wealthy population. This also leads to a reliance upon a few mono-crops, all of which threatens biodiversity and the resilience of the natural world (section 5.3.2). The reliance upon fossil fuels to drive the industrial lifestyle has led to a rise in greenhouse gases, and these have also contributed to a rising global temperature. This may lead to more extreme weather, rising seas and ocean acidification (section 5.3.3). Resource use may put pressure upon water, rising population and wealth is putting pressure upon food, increasing wealth and urbanisation is impacting upon fossil fuels, and land is also under pressure due to food and consumer demand (section 5.3.4).

There are limits to human knowledge about the integrated impacts of each of increasing pressure upon the Earth from rising population and wealth, biodiversity loss, climate change, and resource use (section 5.3.7). The Ecological Footprint suggests that humankind is already using resources at a rate beyond carrying capacity (section 5.3.6). As has been argued, if this continues then the cumulative impact of rising wealth and population, climate change, biodiversity and resources depletion may well lead to changes within the Earth System (section 5.3.5). This suggests that humankind may need to move from protecting a way of life, to protecting life itself. This suggests that the key challenges of the 21st Century are to with humankind’s relationship with the planet upon which they live and depend. All of this may be leading to global change (section 5.3.7). This global change is impacting not just upon
humankind, but also other living and non-living parts of life on Earth. It could also impact on life on Earth in the future, and upon humans not yet born.

The challenges of the 21st Century, then, appear to be to do with the consequences of the Great Acceleration, and the response of humankind to those consequences. One of the key consequences is that human activity through the Modern Social Imaginary seems to have started to threaten life on Earth, as it is currently constituted. The change to the Earth as a consequence of human activity is having an impact that is global in the spatial domain, future focused in the temporal domain, and ecocentric in the ontological domain. The challenges of the 21st Century seem to be how humankind will meet changes to the Earth and life upon it that are global, future-orientated and ecocentric.

The evidence can lead to differing stances being taken. Humankind can reject the evidence for global change by seeing it as natural fluctuations in the Earth; they can ignore the evidence and carry on as usual; they can despair at the magnitude and implications of the task; they can use their ingenuity to adapt to the changes; or they can transform their way of life in reaction to the evidence. These stances will be explored in the next chapter.
Chapter 6 The challenges of the 21st Century and the Modern Social Imaginary.

6.1 Introduction

At the conclusion of Chapter 5 it was argued that from the evidence of the examination of the challenges of the 21st Century, there appeared to be signs of a global change, change that was potentially threatening the eco-commons. These emerging challenges, whilst observable now, pose a possible threat to all life in the future. It was argued in Chapter 2 that all current life is a result of the evolutionary processes that have developed through the interaction of biotic and abiotic forms. A threat to the eco-commons threatens all life as it is presently constituted. Those life conditions are ones that have led to the flourishing of humankind, so a threat to them is also a threat to humankind. The major challenges of the 21st Century, it was concluded, were primarily the threat to life and life systems, and these were identified as global in the spatial domain, future orientated in the temporal domain, and ecocentric in the ontological domain. This chapter firstly examines the evidence presented in sections 5.3 and 5.4 to identify underlying values implied by the evidence, and then examines the five stances identified in section 5.4 in the context of the domains. Having done this it will be possible to see whether the values identified through the evidence align with the values of the Modern Social Imaginary in section 3.5 and to see which stance best aligns with the challenges of the 21st Century.

6.2 The challenges and values

If there is close alignment between the values of the Modern Social Imaginary, outlined in sections 3.5.2-3.5.4, and the challenges of the 21st Century as identified in Chapter 5, then this suggests that there is little necessity for change, and that the Modern Social Imaginary should meet the challenges of the 21st Century. If, however, there is limited or no alignment, then it implies that the Modern Social Imaginary may well not meet the challenges of the 21st Century.
6.2.1 Uncertainty in knowledge

In section 5.3.1, Population growth and its effects, the ability to predict population growth is restricted, and consequently operates within variants and ranges. The impact of this with rising wealth may also impact upon Earth Systems.

In section 5.3.3, Climate Change, it is difficult to know how far the Earth’s temperature may rise, or the effect this may have upon life on Earth. The rise in CO2 and methane beyond current known limits may have as yet unknown effects.

In section 5.3.5 Planetary Boundaries and Tipping Points, there appears to be limited knowledge about how the Earth works, that knowledge about the effects of differing actions upon the Earth is not fully understood, and that it is not known whether there is a tipping point beyond which irretrievable damage has been done to Earth Systems.

These sections suggest that it is currently difficult to know how the differing elements might interact, what might happen at different levels, and when and if there could be rapid change brought about by that interaction. Current levels of knowledge are not adequate to understand what the implications of rising population, rising greenhouse gases and temperature, and moving beyond current boundaries may do to the Earth. If the effects are unknowable, then this implies that prediction based upon secure knowledge is not easy, and if something cannot be predicted, then it cannot be controlled (Princen 2005). In section 2.2.3 Popper’s (1963) idea of falsifiability was introduced, and used to develop the idea of humankind’s knowledge of the world as being fallible, in that it was likely to change as new theories and evidence are developed. It is because knowledge of the world is fallible that it has to be treated as provisional, that it may explain reality until such time as the evidence supersedes it, and another theory is put forward. What the evidence from Chapter 5 indicates is that there is so much uncertainty about the effects of human activity upon the Earth’s systems, and an understanding of those
systems, that to accept an epistemology based around rationalism, reductionism and materialism with the attendant belief in measuring, predicting and controlling is problematic, and a more tentative approach is implied, one that acknowledges possible limits to understanding, and that what is known now may change.

If there is limited understanding of the effect of human actions, it suggests a need to be careful in what actions are taken, and to err on the side of caution. This suggests being aware of the law of unintended consequences, and then applying the precautionary principle. The law of unintended consequences, according to Norton (2008), states that actions of people can often have unanticipated or unintended effects. This means trying to foresee not just the intended consequences, but also any other consequences and effects. This is obviously moving beyond the linear problem-solving approach within the Modern Social Imaginary. In order to try to foresee the possible unanticipated or unintended effects it is useful to use the precautionary principle.

Aven (2011:1516) states that the precautionary principle ‘is the ethical principle that if the consequences of an activity could be serious and subject to scientific uncertainties, then precautionary measures should be taken or the activity should not be carried out at all’. According to Myers (2002:211) this has three elements: of ‘potential harm, scientific uncertainty, and precautionary action’. The precautionary principle means trying to identify potential harmful effects, and then not proceeding if they are identified. This implies focusing upon the values and the goals, rather than the economics or profits of the action (Myers 2002). To focus upon values and goals suggests discussing ends; it is part of the democratic process. It also involves being uncertain. In this way risk is lowered and potential harm reduced, as actions are not engaged in until a greater understanding of the impact has been assessed. In the context of the Earth’s systems, the precautionary principle ‘calls for the humble recognition that the world is full of scientific uncertainties. The Earth is made of complex, interrelated systems, vulnerable to harm from human activities and resistant to comprehensive understanding. Precaution is an expression of values that give priority to these vulnerable systems, including
human bodies’ (Myers 2002:216).

This goes against the rationalism and reductionism that is a feature of the Modern Social Imaginary (3.5.4), because if things are not known then they may be outside of human reason. Planetary boundaries also suggest that nationalism is no longer as useful a value, as the effects are felt globally, rather than within specific countries. Planetary boundaries also imply the need to see the Earth as a complex system.

6.2.2 Systems thinking and inter-connectedness of life

In section 5.3.2, Biodiversity, it seems that many species are being made extinct. It is not known what impact this may have upon Earth Systems, and when and where the impact may accelerate.

This also suggests the need for systems thinking, for seeing all life and life processes as being both linked and dependent upon each other (Capra 2002), so that life is sustained through the many interactions of all life and life processes (Wilson 2002). Complex systems exhibit a number of features, where a ‘system can be defined as “a whole compounded of several parts or members” - that is, a set of interacting or interdependent elements or components forming an integrated whole’ (Harris 2012:5). A complex system differs from a simple system in that it ‘consists of numerous subsystems interacting with each other through multiple, nonlinear, recursive feedback loops’ (Sanger and Giddings 2012:369), some of which may be positive (which make things worse), or negative (which make things better) feedback loops. Complex systems are also unpredictable, which means that any predictions must be provisional (Sanger and Giddings 2012:374), and uncertain, in that small changes can have large effects. Another aspect of complex systems is the notion of thresholds where ‘relatively small changes in a forcing function can push the system across a threshold and lead to abrupt changes in key aspects of System functioning’ (Steffen et. al. 2004:12).

The Earth can be seen as a complex system as

‘The Earth system behaves as a single, self-regulating system
with physical, chemical, biological, and human components. The interactions and feedbacks between the component parts are complex and exhibit multi-scale temporal and spatial variability' (Harris 2012:6)

It is also a closed system, seeing the Earth as a ‘self-regulating system of interacting living and non-living elements’ which interact ‘to produce and maintain an environment conducive to organic life and the emergence of consciousness.’ (Harris 2012:7). It does this in the Ecosphere, and the interaction between spheres and cycles.

The Earth system consists of six major interlinked and interacting components or "spheres" (see figure 6.2.2); the atmosphere, which consists all the gases surrounding the Earth; the hydrosphere, all the water on the planet; the biosphere, all life on Earth; the geosphere, all the rocks and soil; the cryosphere, the frozen parts of the Earth; and the anthroposphere, the parts of the Earth that have been modified by humankind. These are all sub-systems of the whole Earth system, and have sub-systems within (Harris 2012).

Figure 6.2.2 The interaction of the Earth’s spheres (Harris 2012:8).
Within the Earth system there are four natural cycles which involve ‘continual exchanges between the living and inanimate components of all spheres of the Earth system to provide the current basis for life on Earth’ (Harris 2012:8); the hydrological, nitrogen, oxygen and carbon cycles.

Again, it is important to remember the foundational truth that ‘the ecosphere sustains people and everything that they do; that anything that fails to fit into the ecosphere is a threat to its finely balanced cycles’ (Commoner 1971:8). Humankind both participates in and exploits the environment; it is from the environment that all life is sustained. To ignore this, as anthropocentric thought has, is to risk catastrophe (Commoner 1971).

It is the changes made to the cycles, possibly through human action that makes the challenges of the 21st Century so important. For some these changes are as great as natural forces, but with a magnitude and rate of change that is unprecedented. The problem is that the change, due to the complex nature of the interactions, may not be gradual, but abrupt when critical thresholds are breached (Harris 2012). There may be little warning when this might happen, meaning it is too late to avert danger.

As all life and life processes have come through a common evolutionary process, and survived numerous challenges to produce a planet abundant with life (Lovelock 2009), this implies three things: firstly that all life is linked through what Capra (1996) calls the web of life, a perspective that is not materialistic. Secondly, that if life is interdependent, then there is little place for egocentrism, and an evolutionary perspective implies a perspective that acknowledges time in a frame longer than the now; it is non-contempocentric. Thirdly, that as life processes and life are linked and interact, then to harm that process may have harmful consequences, and as previous extinctions have shown, life can be precarious. This suggests that life on Earth itself is both precious and vulnerable, a non-anthropocentric perspective. Ward and Brownlee (2003) have developed the Rare Earth Hypothesis which states that attaining life is one thing, maintaining it another (italics in original). Within this hypothesis is ‘the paradox that life may be nearly everywhere but complex life almost nowhere’ (Ward and Brownlee 2003:xxv). If the Rare Earth Hypothesis were accepted,
then it would seem that complex life is very rare. It has happened on Earth: if something happens to threaten the maintenance of that life, then it would seem to be beholden to the complex life that has arisen to ensure that the current forms of life can be maintained. Complex mammalian life only evolved due to the extinction of the dinosaurs 65 million years ago: if the comet that ultimately destroyed them had missed the Earth, there is a good chance that humankind would not be here (Ward and Brownlee 2003:161, Ćirković 2007). Life may be found on other planets, as may complex life, but at the moment only life on Earth is known. This shows how fragile and tenuous life is, and also that knowledge of the Universe, like knowledge of Earth systems, is at an early stage of understanding.

**6.2.3 Thinking and living ecologically**

In section 5.3.4, Resources and their use, food, water, energy and land are all under increasing pressure. Rising population and wealth leads to a greater demand being placed upon all resources. Some of these are renewable: many are not.

In section 5.3.6, Ecological Footprint, it seems that humankind is operating beyond the Earth’s carrying capacity already, and that current trends may exacerbate this.

With the possibility of running out of non-renewable resources, and of putting renewable ones under strain, this suggests that the Earth has a finite amount of resources. To conserve the Earth’s resources implies a rejection, or limitation, upon goods produced, and in particular, consumed, a non-materialist approach. It also suggests a rejection of progress and growth as understood in the Modern Social Imaginary.

The Ecological Footprint develops this point, by suggesting that it is not sensible to harm the thing that you rely upon, the life processes of the Earth, in order to produce consumer goods of a limited duration and durability. It could be suggested that to do so is *irrational*, that in terms of the Earth the rationalism
promoted by the Modern Social Imaginary is not appropriate. The Ecological Footprint also identifies differences between different nations in terms of usage of the Earth’s resources, again raising issues of nationalism.

Odum (1997:14) makes a distinction between the ‘life-support environment’ which ‘is that part of the earth that provides the physiological necessities of life, namely, food and other energy, mineral nutrients, air, and water’ and the ‘life-support system’ which is ‘the functional term for the environment, organisms, processes, and resources interacting to provide these physical necessities’. It is upon this that economies function, ‘using natural and human resources to produce marketable goods and services. At the same time, societies survive and thrive within the environment determined by the physical limits of atmosphere, land, water, biodiversity and other material resources’ (UNEP 2012a:xviii). All human activity rests upon a natural base, as ‘humans are nested in cultural systems, and cultural systems are nested in natural systems’ (Bowers 1997:viii). This leads to what Thiele (2011:5) calls ‘nested realms of complex interdependence’. The natural base is the eco-commons, and upon this sits the superstructure of the cultural commons and the private realm, as outlined in Chapter 2.

The key point of the effects of the Great Acceleration is that human activity appears to be having a serious effect upon the eco-commons, those aspects of life that all living things need to sustain them. A growing human population and rising wealth propelled by a market economy operating globally, a combination of treating the commons as externalities, and the enclosing of the commons through the expansion of the private realm, has possibly led human activity to change the eco-commons.

6.2.4 Summary of the challenges and values

The impact of the challenges in Chapter 5 appears to be variable, and thus unknowable with certainty. There is also uncertainty about the effects and when and if rapid change might occur. This suggests a provisional epistemology is best suited to understanding the challenges. Not knowing the consequences
suggests a more precautionary approach to human interaction with the Earth. Humankind’s understanding of the Earth’s systems is also limited, and the ways in which the differing spheres and cycles interact is at an early stage of understanding. This suggests that humankind need to develop an epistemology based around a non-reductionist, non-rationalist approach to knowledge. Current usage and impact of non-renewable resources also suggest a view of growth and progress that is not materially based.

The effects of the challenges appear to be affecting the ecocommons, upon which all life forms and life – processes depend. This affects life, and currently the only known complex life forms are found on Earth. This implies a non-egocentric and a non-anthropocentric perspective. The dependency of all life on the eco-commons also implies a non-materialistic approach, as does the fragility of complex life forms. Also inferred from this is the need to understand the Earth in a longer time span, a non-contempocentric view. These effects are happening at a global level, hinting that an approach based upon national action will not work. In the context of values then, it would appear that the Modern Social Imaginary could not meet the challenges of the 21st Century. Could it meet them at the domain level?

**6.3 The challenges and the domains**

In section 5.5 it was proposed that there were five stances that could be taken as a consequence of the evidence concerning global change; to reject, ignore, despair, adapt or transform. This section looks at whether the Modern Social Imaginary is able to meet the needs of the challenges of the 21st Century, as identified in Chapter 5, at the domain level.

The stances can be put into three clusters: firstly, the despair stance, which accepts the evidence but infers that it is too late to do anything; secondly the ignore and reject stances, the former continuing as if nothing is happening, and the latter which posits other causes, or disputes both the evidence and the conclusions derived from it; thirdly the adapt and transform stances, the former which accepts the evidence but challenges the timing and scale of change, and
the latter, which accepts the evidence and concludes that wholesale change is needed.

6.3.1 Despair stance

The despair stance is exemplified by Lovelock (2009) and his belief that it is too late to do anything about the impending crisis. The despair stance is one that acknowledges global change, and argues that it is caused by too many humans using too many resources. This stance argues that it is too late to do anything about global change, and that the consequences are that there are likely to be mass deaths of humans, so that the human population may be reduced to the low hundreds of millions, as the Earth warms and land is inundated. Although Lovelock’s prediction may come to pass, to just accept that global change cannot be met is to reject hope and human resilience. It also means, if Lovelock’s analysis is accepted, to condemn future generations of humans to try to live in a degraded planet, possibly suffering depredations and hardship, and to condemn other life forms to the same fate, whilst those living now do nothing. This accepts the Anthropocene argument (Steffen et. al. 2004), which states that the change is due to human activity. It is global, contempocentric, and anthropocentric.

6.3.2 Ignore stance

To ignore Global Change is to continue with ‘business-as-usual’ (Steffen et. al. 2007:619). This is neither a denial nor acceptance position, but one of continuing with current practice. This is often seen with Governments, who periodically produce reports identifying climate change as an impending problem, and then calling for growth in the economy (HMG 2010). In this stance, the Modern Social Imaginary continues, but as LeFay (2006) and Princen (2005) suggest, it was this way of seeing reality that brought about the challenges in the first place. If the practices of the Modern Social Imaginary are responsible for the potential threat to the eco-commons from global change, then to continue in this vein is to suggest even more environmental damage, with unknown outcomes. Underpinning this stance are arguments such as rising wealth will enable countries to tackle global
change, that the market will bring about change, or that time could be spent on more important needs (Steffen et. al. 2007). This is national, contempocentric and anthropocentric in the three domains.

A variation of this position, one that reflects change in the spatial domain, is suggested by Steger (2009a). Steger (2009a) identifies a Global Imaginary, and contrasts this with the National Imaginary. The National Imaginary is the same as the Modern Social Imaginary. Steger’s Global Imaginary could be seen as an emerging social imaginary. One of the problems with Steger (2009a) is that he quickly moves from social imaginary down to ideology. The three ideologies that are found within Steger’s Global Imaginary were identified as market, justice and jihadist globalisms. Only within the justice globalism is there any mention of the environment, and that is in reaction to global poverty, rather than seeing it the other way around. Market globalism is globalisation in its neo-liberal form, and jihadist globalism is about the development of a fundamentalist perspective. It may be that market globalism with transform into a form of global hyper-individualism, but even then it would still focus upon the anthropocentric and the contempocentric. There is a possibility that the Global Imaginary, in its market form, could emerge as the dominant social imaginary.

6.3.3 Reject stance

To reject global change means seeing the changes that are happening as nothing more than the natural cycles of the Earth, and that these have happened before and life has continued. It is a rejection of the Anthropocene argument (Brown 2014). The evidence of change may well be accepted, but the causes are often contested. For example Sharma (2002) and Friis-Christensen and Svensmark (1997) attribute a lot of climate change to solar activity. If this is accepted, the effects of global change (not just climate change) still have to be dealt with.

A stronger version rejects that global change is happening at all. Brown (2014) contends that this is more a battle of values, than of the science or evidence. To accept the evidence is to accept the need for change, and this threatens vested interests. It becomes a defence of the Modern Social Imaginary: in this sense it is an explicit version of the ignore stance. There is the
danger of eliding global change into climate change, and then rejecting the science of climate change. In this way Beck (2010:256) argues, ‘climate politics is precisely not about climate but about transforming the basic concepts and institutions of first, industrial, nation-state modernity’. This then moves the dispute between ignore/reject and adapt/transform, from one of science to one of values, something that opens up the debate to all, what Goeminne (2012:1) sees as a ‘political struggle over what to be concerned about’. The outcome of this stance is the same as the ignore stance.

The stronger version seems to be at variance with the evidence so far. The human population is increasing, possibly to 9-10 billions, greenhouse gases are at their highest ever, beyond previous limits. This may well cause further warming of the planet, with greater extreme climatic disasters. This stance is global in the spatial domain, contempocentric in the temporal, and anthropocentric in the ontological.

6.3.4 Adapt stance

The adapt stance (Steffen et. al. 2007:619) accepts the evidence of global change, but believes that human ingenuity will be able to save the day, and that humankind can apply technology to mitigating and ameliorating the effects of human action upon the planet. This relies heavily upon the development and use of geoengineering technology. Geoengineering is the ‘deliberate large-scale intervention in the Earth’s climate system, in order to moderate global warming’ (Royal Society 2009:ix). This technology is in its infancy, and there is considerable uncertainty about its impact (Royal Society 2009). It means seeking methods to remove carbon dioxide, and reducing the absorption of solar radiation.

This is a consequence of a particular way of thinking, of thinking in a singular, linear fashion. Linear thinking enables prediction, and once ‘we can predict, we can engineer the world and make it work in the ways we want it to’ (Byrne 1998:19). Lawson (2006) questions the science in terms of the likely impact that climate change (not global change) may have, arguing that it is partly an existing problem (natural climate change), that adaptation brings
benefits, and that adaptation will happen through market forces, such that ‘adaptation enables [humans] to pocket the benefits while diminishing the costs’ (Lawson 2006:7). Lomborg (2009) agrees with this, and suggests that the cost of cutting carbon is very expensive, with limited gain, yet much harm to the economy, affecting growth. Using a cost-benefit analysis (an example of rationalist thought) Lawson (2006: 12) states that adaptation is better than trying to reduce CO2 emissions, and anyway he asks ‘Are we seriously prepared to do this?’ He argues that there are other priorities that need attention, and that geoengineering is the best option. This is something that Lomborg (2009) also agrees with, stating that a small investment in geoengineering now will reap benefits later, by delaying global warming and enabling new technology to be developed. Buying time like this means that other priorities, such as combating hunger, ending conflicts, stopping communicable diseases, clean drinking water and education for all (Lomborg 2005) can be tackled.

This stance means perpetuating the position that humankind can control the Earth System, and that the application of technologies devised with little understanding of their impact may ameliorate the global changes that a previous form of this thinking brought about. The difference this time is that in the past there was ignorance of the effects of human action: now there is greater knowledge of what the effects of human actions could be. This stance is global, future-orientated, and anthropocentric.

6.3.5 Transform stance

The transform stance (Steffen et al. 2007:619) accepts the evidence and argues that only by wholesale change to how humankind interacts with the Earth’s systems will it be possible to sustain life on Earth, as it is currently known. Goldsmith (1996) argues that all wealth comes from the Earth, and that real wealth can only be used if the Earth is looked after, and that only by doing this can ‘the critical order of the natural world or of the cosmos’ be preserved (Goldsmith 1996:xv). Lasch (1991:23) further argues that finite resources cannot support indefinite growth. This implies using resources differently, and re-assessing what is meant by wealth, growth and progress. The effects of 10
billion people trying to live lives like the richest on the planet do now is impossible, and if all of life is to survive, then how humankind uses the resources of the planet will need to change. The transform stance means accepting wholesale change to how humans live upon the planet. It means using the limited resources humans have in a way that doesn’t impact upon future generations, doesn’t condemn current generations, and doesn’t destroy other life forms and the conditions needed for their thriving. This stance is global, future-orientated and ecocentric.

6.4 Conclusion

In section 6.2 the evidence from Chapter 5 was examined from a value perspective, and the implications drawn from it, suggests that the values identified within the Modern Social Imaginary may not be appropriate to meet the challenges of the 21st Century (see section 6.2.4). In section 6.3 the stances identified at the end of Chapter 5 were examined from a domain perspective, and it was appears that the transform stance was the one best fitted to the challenges of the 21st Century. The ignore stance best fitted the Modern Social Imaginary, although the reject stance may be seen as a development of this position. It would thus seem to suggest that from this analysis of the challenges of the 21st Century as outlined in Chapter 5, that the Modern Social Imaginary would be unable to meet those challenges, from both a domain and values perspective. This implies the need for a different social imaginary to meet the challenges of the 21st Century. Chapter 7 develops the values identified in section 6.2, and the domains from the transform stance in section 6.3, to map out what could be an emerging social imaginary to meet the challenges of the 21st Century.
Chapter 7: The Ecological Social Imaginary

7.1 Introduction

At the end of Chapter 6 it was argued that the values and domains of the Modern Social Imaginary may well not be able to meet the challenges of the 21st Century as identified in Chapter 5. If the Modern Social Imaginary is not appropriate to the challenges of the 21st Century then what will be? This section looks at the need for a post-modern social imaginary, one that looks beyond the Modern. This will initially require a distinction to be made between Postmodern, and Post-Modern (7.2). This will be followed by the identification of possible emerging social imaginaries, and the reasons for the development of a social imaginary based around the environment will be mapped out (7.3). This will then lead in to the framing of a post-modern social imaginary, the Ecological Social Imaginary (7.4 and 7.5), which, it will be argued, will be better placed meet the challenges of the 21st Century.

7.2 What does ‘post’ in the post-modern social imaginary mean?

Best and Kellner (1991) identify a dual use of the prefix ‘post’ in relation to Postmodern. The first is as not modern, as a rupture with the past. The other use suggests continuity, as in following.

According to Bonny (2007) the Postmodern can only be discussed in relation to the Modern; it cannot exist except in reaction and relation to, the Modern; it is a symbiotic relationship. For Smart (1993:16) then, 'Postmodernism may be described as a cultural configuration that is broadly continuous with modernism, that is as not significantly different'. For Jameson (1988:28) the 'emergence of postmodernism is closely related to the emergence of [a] new moment of late, consumer or multinational capitalism'. If Postmodern is to do with late-capitalism, with consumerism and creating identity through possessions (Jameson 1988), then this fits with the continuity or following understanding of 'post'.

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The Post-Modern in contrast is one that has broken free from the Modern; it defines itself not in relation to the Modern, but in contrast to the Modern (Bonny 2007), it is Best and Kellner’s (1991) not modern usage.

For the purposes of this dissertation postmodern will be used in the following or continuity use of the prefix, in that postmodernism is the next stage of modernism. Post-modern will be used to denote the not modern, the rupture use, so that a Post-modern Social Imaginary is very different from the Modern Social Imaginary. It describes and details a very different way of perceiving the world and reality.

7.3 What are the emerging social imaginaries?

In section 3.3 a model of change was proposed, using the work of Williams (1973). This showed how social imaginaries change, and how the dominant social imaginary is always in tension with emerging ones. In section 6.3.2 Steger’s (2009a) Global Imaginary was identified, and contrasted with the National Imaginary, which was the same as the Modern Social Imaginary. In section 3.5 the three key domains of the Modern Social Imaginary were identified as contempocentric in the temporal domain, national in the spatial, and anthropocentric in the ontological. In sections 6.3 and 6.4 it was argued that the Modern Social Imaginary could not meet the challenges of the 21st Century, as these challenges are future-orientated in the temporal domain, global in the spatial, and ecocentric in the ontological. Steger’s (2009a) Global Imaginary could be seen as an emerging social imaginary. It was identified as being global, contempocentric and anthropocentric. In the context of section 7.2 it would be a postmodern social imaginary. In the same way that the Modern Social Imaginary cannot meet the challenges of the 21st Century as identified in Chapters 5 and 6, then neither can a postmodern social imaginary: this does not mean, however, that it could not become the new dominant social imaginary.
To meet the challenges of the 21st Century, it was argued that a social imaginary that is global, future-orientated and ecocentric was one that was best able to meet those challenges. This would be a post-modern social imaginary.

Bussey and Inayatullah (2008:3) warn of talk of THE future, an ‘official’ future, one which is about globalisation, new technologies, and in which the future is obvious. This would be the postmodern social imaginary. They contrast this with ‘alternative futures’; the next section starts to map out an ‘alternative future’, a post-modern social imaginary.

The Global Imaginary put forward by Steger (2009) lacks an understanding of the global nature of possible environmental crises. The Global Imaginary is still anthropocentric, and contempocentric, it just works upon a global scale. The Global Imaginary still subscribes to the key values of modernity (see section 3.5) albeit on a global scale. It is therefore unable to meet the challenges of the 21st Century as outlined in Chapter 5. To do this, another imaginary is needed, one that is future-orientated, global and ecocentric: what will be termed the Ecological Social Imaginary.

7.4 Introduction to the Ecological Social Imaginary

Clark (1998) sees the need for ‘the generation of a powerful ecological imaginary to challenge the dominant economistic one’ as the environment cannot be seen as another issue: according to Princen (2010), it is life itself. For Princen (2010:183) the ‘story of the 21st Century is living within [humankind’s] means, biophysical and social’ and this requires a new, an ecological, imaginary. There is a need to construct what Princen (2010:viii) terms ‘images of the possible’ as ‘it is through language that [humans] see and construct [their] world’ (Princen 2010:x). He suggests that this is done by imagining an economy, ‘a material system’, that is economical with regard to the resources it uses, so that it lays the groundwork for an ecological order (Princen 2010:2).

Tibbs (2011) argues that humans are living unsustainably, and that humankind needs to change to live sustainably. Sustainability, he states, has
two aspects, the predictive and the normative. This study synthesises the predictive (Chapter 5), and then tries to identify the normative (Chapters 6 and 7). This requires change on two fronts: the technological and the social. The former, Tibbs (2011) suggests, humankind already have; it is the latter that needs the major effort, and to which this study is committed.

For Tibbs (2011:14) the move to sustainability requires two things to happen at once: ‘green, eco-efficient technology, and a significant shift in cultural values happening together’. I would argue that the latter must happen before the former. It is only by changing cultural values that humans will develop and use appropriate technology. Tibbs (2011) claims that humankind has had appropriate technological know-how as to how to deal with their unsustainable lifestyle for a long time, it is just that they have not used it. This is because the move to sustainability is not a technological issue, but a normative one. It requires a change of values and of outlook. To enable this a new ‘consciousness’ is needed, for ‘achieving sustainability must be a process of social change leading to a recasting of technology – a new design intention drawing on today’s capability [and] redirecting it’ (Tibbs 2011:28).

These values may arise through growing wealth, and the realisation that wealth alone does not bring about happiness or wellbeing. Beyond a certain level needed for survival and comfort there is no net gain in happiness and wellbeing through further accumulation of monetary wealth (Lasch 1991, Wilkinson and Pickett 2009). Alternatively they may arise out of the realisation that the current system is both unsustainable and self-destructive. The current system can, Bowers (1997) and Beck (2010) contend, only continue by using up finite resources, and by commoditising the social fabric that controls and sustains it. This may lead to the ‘belated discovery that the Earth’s ecology will no longer sustain an indefinite expansion of productive forces [and] deals the final blow to the belief in progress’ (Lasch 1991:529).

Princen (2010:32) identifies a paradox within the Modern Social Imaginary as the economy depends on increasing consumption, but ever-increasing consumption strains ecosystems, both resources (soil and water) and waste...
sinks (the oceans and atmosphere) that the economy relies upon. Through this paradox, Raskin et. al. (2002:6), identify as a need for change, as

‘The essence of the premise of a planetary transition is that the transformation of nature and the interconnectedness of human affairs has reached a qualitatively new stage. Growing human population and economies inevitably must butt against the resource limits of a finite planet’.

This implies a move to a new social imaginary, from the Modern Social Imaginary, based around a national, contempocentric and anthropocentric view of the world, to an Ecological Social Imaginary, based around a global, future-oriented and ecocentric view of the world, as the best way in which to meet the challenges of the 21st Century. This is because the Modern Social Imaginary has created a view of reality that has viewed the Earth as both infinite in resources and for human use alone, and that only by looking at the world in a different way can humankind protect the life support systems that enable life to flourish on the planet; the eco-commons.

A danger with the articulation of the Ecological Social Imaginary is that it becomes what deGeus (2002) calls an ‘ecotopian ideal’. The articulation of the Ecological Social Imaginary can then become prescriptive, ‘a fixed, abstract final goal’ that creates ‘an ideal, “magnificent” ultimate ecostate’ (deGeus 2002: 191). He counters this by rejecting the above, and mirroring section 3.2 that saw utopias as alternative realities, argues for ‘ecotopias’ as being useful for making decisions in favour of the environment, and for outlining ‘a strategy of intelligent adaptation, guiding, and experimenting [that] is much less dogmatic and will enable society to more efficiently react to unexpected events and developments’ (deGeus 2002: 191). This will not be easy, and humankind cannot start from where they want to be, but from where they are:

‘The guiding principle is “to rebuild the ship while at sea”: Our society is not like a ship in dry dock but is rather in the midst of the turbulent waves of worldwide economic growth and environmental degradation and must be reconstructed during this difficult journey’ (deGeus 2002: 191).

Is, deGeus (2002:190) asks, ecotopia a total vision or a navigational compass? The framing of the Ecological Social Imaginary in section 7.5 is a
tentative answer to the challenges of the 21st Century. It does not, and cannot, claim to be ‘the answer’, but it may be ‘an answer’, and, like the navigational compass, it may point in the correct general direction.

7.5 Framing an Ecological Social Imaginary

According to Howard (2008:309) any emerging social imaginary needs to develop a new consciousness and a new language to replace the dominant one, as a ‘shifting consciousness requires shifting language’. The new consciousness and language then generate a ‘new normal’ and ‘new principles’ (Princen 2010). From these can be derived the ontology and epistemology that feed in to the axiology of the Ecological Social Imaginary, which ‘provides a framework for dealing with the world as it is expected to be, not as it is now’ (Royal Society 2012:84).

7.5.1 Consciousness, language and metaphor

A new consciousness is needed, as according to Speth (2008:200) ‘the environmental crisis is a crisis of the spirit’ (Beck 2010, Princen 2005), it is ‘a consciousness that sees humans as part of the web of life, implicated in the world not simply as isolated, self-maximising individuals’ (Howard 2008:304) emphasising ‘what it means to truly dwell on and care for the earth’ (Howard 2008:304). To show humans as a-part-of, not apart-from, the natural world requires a focus upon ‘relationships, interdependence, and interconnectedness’ (Howard 2008:305) so that there is a re-connecting to society, cosmos and flourishing through transcendence (Stock 2006). As Callicott 2008:168) observes, to change what humans do to, and in, the natural environment, they have to change how they think about it.

A new language is needed (Princen 2005, Howard 2008), as an emerging Ecological Social Imaginary ‘constitutes a multidimensional set of processes in which images, sound bites, metaphors, myths, symbols, and spatial arrangements of globility are just as important as economic and technological dynamics’ (Steger 2009a: 11). A paradox with the Ecological Social Imaginary is that whilst ‘environmental imaginaries are defined as place-specific social
hierarchies of environmental discourses that provide the languages, norms, metaphors and meanings for constructing and expressing nature’ (McGregor 2004:595), their scope is global. This means constructing a language that encompasses a multiplicity of meanings, as there are ‘a multiplicity of orders networked together on multiple levels’ (Steger 2009a: 12). There is also the need to link the global nature of the process of global change with the local nature of human existence, and also how will ‘scientists’ impersonal knowledge of the climate be synchronized with the mundane rhythms of lived lives and the specificities of human experience?’ (Jasanoff 2010:238). As Bowers (1997:ix) suggests, the English language emphasises separation, such as ‘culture and nature’ when there is a need to try to put the two together in ‘culture/nature’.

To develop the language Bowers (1997) calls for root metaphors and symbolic maps such as; all life is equal; how to link cultural practices and the natural world; how to develop inter-generational connectedness and trans-generational communication; what is appropriate technology; how to explain ecocentrism?

Hayward (1994: 29) develops this by contrasting an ‘holistic organic ontology’ with the ‘atomistic materialist ontology’ found in the Modern Social Imaginary. In the former things exist in relation to others and within processes. They are indivisible from the environment within which they live and depend. The latter suggest free entities, moving almost independently of their environment.

Capra (1982) identifies various elements within an organicist perspective. Organisms exist within relationships to both biotic and abiotic elements. There is a certain integration of the individual organism with its environment, what Capra (1982:289) terms the ‘nonlinear interconnectedness of living organisms’. The organisms are nested and dynamic, in that they live within other systems, and are systems themselves. They can self-organise, in that their structure is not environmentally devised; they self-renew, through replacement and waste disposal; and they self-transcend, in that they can learn and evolve. Organisms, social systems and ecosystems are all systems, and entail ‘a variety of
organisms and inanimate matter in mutual interaction' (Capra 1982:287). They can grow, and have flexibility that enables adaptation, especially to a changing environment. Because they are open systems, with a need for food, energy and expelling waste, there is a constant interaction and reliance upon the environments in which they live. Hayward (1994) and Kumar (2013), also suggest the metaphor of the organism and it is interesting to compare it with the machine metaphor of the Modern Social Imaginary (see section 3.5.1). The root metaphor of the Ecological Social Imaginary is thus organicism.

7.5.2 A new normal and principles

To develop this new language and consciousness humankind need to create ‘a new normal’ (Princen 2010:102, Wann 2010), which is based upon ‘principles that are ‘ecologically consonant’, attuned to how ecosystems actually function’ (Princen 2010:69). These can be contrasted with the principles of the Modern Social Imaginary in section 3.5.1.

1) The Intermittency Principle – accepting that supply is not constant but can ‘fluctuate with natural and social rhythms’ (Princen 2010:71)

2) The Sufficiency Principle - knowing enoughness and too-muchness, ‘of doing well by doing less than the most possible’ (Princen 2010:73)

3) The Capping Principle – accepting biophysical constraints, that ‘regenerative capacities...are limited’ (Princen 2010:75)

4) The Source Principle – ‘it is prudent to protect the source’ (Princen 2010:76) to do otherwise is to destroy the very thing that you rely upon.

This produces ‘an economical economy [which] puts consumption in its proper place, meeting basic material needs, and puts production in its proper place, meeting basic human needs for making, creating and caring’ (Princen 2010:95). There is a connection between humans and nature, and there are many economies: household, community, care, and nature. There is the need to devise ‘an economic system that can provide for the world’s population without destroying the environment in the process’ based upon development not growth, and that looks at the interests of future life (Des Jardins 1997:58). Thus for Princen (2005) humans engage in real work, not producing and consuming; time that goes beyond mechanical; work that goes beyond
employment ‘to adopt a model in which people do not work so hard once their primary needs are amply satisfied’ (Royal Society 2012:87).

As part of this new normal Princen (2010:116) urges people to ‘be a citizen, a neighbour, a parent, a friend, a guardian, a steward before being a consumer’ and ‘that making goods and services that were useful to others [is] a higher pursuit than merely accumulating wealth’ (Princen 2010:122). In this way the precepts of the Modern Social Imaginary are downgraded to a more human and sustainable mode. As importantly, the new normal means moving from seeing nature as a resource to be exploited to seeing humans having an ‘ecological responsibility as members of the earth community [which] arises from both [their] relationship to the interrelated web of life on earth and also from [their] place as a unique form of nature’s and the earth’s self-expression’ (Clark 1998). It means grounding society in the biophysical, focusing on work, not purchasing goods, and to look to the long-term (Princen 2010:17).

To move towards coherence, a social imaginary provides the new consciousness through an ontology, epistemology and axiology.

**7.5.3 Ontology and epistemology**

Ontologically, reality is seen as a whole, with there being no distinction between differing forms of life, with all of them being interlinked and interdependent. As humanity *is a-part-of* nature, to ‘hurt’ nature is to hurt oneself. It also means realising that there are limits to what actions can be engaged in within these parameters, so it becomes 'a theory to guide humans' material appropriation and disposal in an ecologically constrained world' (Princen 2005:349). There has been a disjuncture between culture and nature in the Modern Social Imaginary, assuming that humankind is *apart-from* nature, rather than the realisation that ‘human beings are made of the very same substance of the biosphere, and the realisation of human powers is to be considered as part of the process that maintains the biosphere’ (Critchley 2004: 11). This suggests connection of all phenomena (not atomistic) and that this phenomena exist in one sphere of being (not dualistic) (Hayward 1994: 30).
From an epistemological perspective there will be 'environmental criticality' (Princen 2005:19) which means humans live in a world that is ultimately unknowable and incontrollable, a world where cause-and-effect relationships are deeply problematic, a world where limited predictability, system surprise, threshold, and synergistic effects are the norm, not the exception' not one that is 'scientifically prescribed [and] economically rational' (Princen 2005:18).

This possibly means acknowledging that humans may move into a risk future which is 'essentially, man-made, incalculable, [full of] uninsurable threats and catastrophes' (Beck 2010:261). When acting there is a need to take into account a wider view; downstream, downwind, the other side of globe and future generations, by using ideas such as polluter pays, precaution, zero discharge, reverse onus, restraint and respite (Princen 2005) and not treating these solely as externalities.

As humankind moves from an ‘over consuming society to a sustainable society’, ‘from an economy premised on efficiency gains and expansion to an economy premised on human and ecological security conditioned by a sense of enoughness and too muchness’ (Princen 2005:364), there may develop the realisation that commodities and goods, private goods, depend upon the eco-commons (climate stability, biodiversity, clean water and fertile soil), the natural capital and common good so that an ‘ecologically rational society resists trade in its foundations, in the material building blocks and structured configurations that undergird that society’ (Princen 2005:26). This also suggests that ‘the essence of sustainable growth is equity toward future generations’ (Speth 2008:61).

### 7.5.4 Axiology

The discussion in sections 7.5.1-7.5.3 thus generates a series of values that give direction to the Ecological Social Imaginary. In the spatial domain *globalism* has already been identified. Having to consider all life and life-processes suggests an *ecocentric* approach to how humans live within their space, and being inter-connected and part of the web of life suggests
transcendence in humankind’s dealings with other life. In the temporal domain future-orientation was identified as a core value. This also implies transcendence, as evolutionary time goes beyond the life of any individual.

Caring for the planet means leaving it in a fit state for subsequent generations, an inter-generational stance. In the ontological domain there is no distinction between humans and the rest of life, an ecocentric view. The organicist perspective and the principles mean seeing the Earth as a system, a holistic view. To think in ecological terms means adopting an ecological criticality, working within biophysical limits. This also implies having a view of resources not based upon constant growth and wealth, but of having sufficient resources for a materially comfortable life.

There is thus a need to move from the values of the Modern Social Imaginary to those of the Ecological Social Imaginary, as shown in figure 7.5.4. Section 7.5.4.1 develops the values of the Ecological Social Imaginary in the context of the spatial, temporal and ontological domains.

<table>
<thead>
<tr>
<th>Modern Social Imaginary</th>
<th>Ecological Social Imaginary</th>
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<tbody>
<tr>
<td><strong>anthropocentrism</strong></td>
<td><strong>ecocentrism</strong></td>
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<td>materialism</td>
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<td><strong>contemposcenrinism</strong></td>
<td><strong>future-orientation</strong></td>
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<td>reductionism</td>
<td>holism, systems</td>
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<td>rationalism</td>
<td>ecological criticality</td>
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<td>nationalism</td>
<td><strong>globalism</strong></td>
</tr>
<tr>
<td>progress</td>
<td>sufficiency</td>
</tr>
</tbody>
</table>

Figure 7.5.4 The values of the Ecological Social Imaginary
7.5.4.1 The Spatial Domain

Globalism

The issues that affect all living things are now global in their reach. One species has caused this and only one species has the conscious ability to correct it. Many of the challenges of the 21st Century are those that affect all living things, and can only be dealt with by concerted co-operative action. The boundaries of the nation-state cannot stop global changes such as climate change, pollution and water depletion. This means seeing the Earth as a single entity, and all life as being important. There is also the understanding that there is now nowhere else to go. The entire globe has people in it, and the ability to move elsewhere if disaster strikes is now severely limited: it is a ‘full world’. This requires letting go of the national outlook that has framed the understanding of so much of humankind for the last three hundred years and creating a global perspective.

Ecocentrism

In the spatial domain, ecocentrism means acknowledging that humankind shares the eco-commons with both biotic and abiotic life. To see life and life-processes as being here solely for human use is to miss the interconnectedness of all life and life-processes, it is to ignore the web of life (LeFay 2006). Within the spatial domain this means not putting humans first, but considering the needs of other life and life-processes. This needs to happen at the very local, where things are, and the specific ecosystems they depend upon, and at the global, acknowledging how Earth systems and cycles interact with living things to sustain the Earth.

Transcendence

In the spatial domain transcendence means recognising the web of life in dealings with other life forms, and not harming them as all life is linked. Through transcendence humankind can understand evolutionary theory in specific contexts (Capra 1983), seeing all life and life-processes as part of a bigger event than a specific individual, but also that specific individuals exist in specific places.
7.5.4.2 The Temporal Domain

Future orientation

A future-orientation encourages humankind to take a wider view of the activities that they engage in, so that they do not threaten the welfare of living and non-living processes in the future (Princen 2005). Many of the challenges of the 21st Century began many hundreds of years ago. Whilst not intentional, they have a serious effect now. What if people had looked ahead then? Whilst many of the consequences may have been unseen, it would have been possible to examine the risk, to try to calculate all possible outcomes. With the release of CFCs, and their effect, humans now have a greater understanding of the possible effects of the chemicals that they produce. The suggestion that nuclear power is used to meet diminishing fossil fuels is another. The possible consequences of nuclear power are well known: what if humankind had projected ahead, not with a Modern Social Imaginary, where they can encase the nuclear waste in concrete and then ‘store’ them underground for thousands of years, but with the ecological criticality where things are uncertain, uncontrollable and unpredictable? What then would they do, with certainty removed? How would humankind assess the risks? (Beck 2010). The use of the Precautionary Principle would ensure that consideration was given to the possible impacts upon life in the future;

‘It demands that humans take care for themselves, their descendants and for the life-preserving processes that nurture their existence. In essence, it requires that risk avoidance becomes an established decision norm where there is reasonable uncertainty regarding possible environmental damage or social deprivation arising out of a proposed course of action.’ (O’Riordan and Jordan 1995:3)

Princen (2005:359) contrasts the ‘Long-term effects and concerns for human and ecological security’ against the Modern Social Imaginary’s need for ‘immediate gratification, to time discounting and to concerns for maximum return on investment and maximum consumer choice’.

Transcendence

Within the Modern Social Imaginary the focus upon materialism has led to an ignoring, or rejection, of anything beyond the material conditions of human
existence. Man has indeed become the measure of all things. Transcendence rejects this, acknowledging that humankind may be the only species to measure all things, but that recognising the uniqueness (at present) of life on earth is important for locating humankind within the wider aspects of life. For Skolimowski (1997:1), it is to see ‘The World as Sanctuary’, rather than ‘The World as a Machine’, a “new worldview [that] emphasizes the unique, precious, and sacred nature of our planet’ in which humankind ‘have to see man as a part of a larger scheme of things: of nature and cosmos’. In this context, transcendence requires seeing time in a longer time frame, not just of the immediate, or of the individual lifetime.

The notion of community and inter-connectedness implies thinking about things other than the individual, about transcending the human species and oneself. It means looking beyond the ‘self’, to seeing the inter-dependence and the inter-connectedness of life and life systems, that life has flourished under certain conditions, and to change those conditions is to threaten life itself. In the Modern Social Imaginary the focus has been upon the relationships between peoples. The Ecological Social Imaginary focuses upon the relationship humans have with their planet and possibly beyond, linking evolutionary theory and the Big Bang through transcendence (Stock 2006).

**Intergenerational**

Weiss (1992:20) outlines a ‘theory of intergenerational equity’ by stating that ‘the human species hold the natural environment of [their] planet in common with other species, other people, and with past, present and future generations’. There are two aspects of this; ‘the first is our relationship with our natural system of which we are a part. The second is our relationship with other generations’ (Weiss 1992:20). This is not easy, and may throw up conflicts; what if the needs of the natural system put future generations in danger, and vice versa.

It could be argued that an inter-generational ‘contract’ already exists, backwards through health and welfare, and forward through education. Different generations look after each other. As Visser ‘t Hooft (1993) states, to move
beyond the generation before and after is ‘a change not of substance, but of scale’. Passmore (1974) identifies ‘a chain of love’, in that if an individual cares and loves their grandchildren, is it not foreseeable that the grandchildren will feel the same towards their grandchildren? Humankind cannot act in the future for them, but only in the now. If it is apparent that humanity are potentially jeopardising the existence of future persons, Visser 't Hooft (1993) asks, do they not have a moral imperative to act in the ‘presumed interests’ of future generations?
This contrasts with the focus upon egocentrism within the Modern Social Imaginary where the focus is upon the individual and their needs, wants and desires.

7.5.4.3 The Ontological Domain

Ecocentrism

Under the Modern Social Imaginary, especially in late capitalism, there has been a relentless move to turn the Commons into commodities, into things that can be bought and sold. Thus both the natural and the cultural commons are consistently being turned into ‘exploitable resources and thus into new markets’ (Bowers 2006:4). When there is no recognition that anything other than consumer goods for humans are the ultimate purpose of life, then the anthropocentric focus of the Modern Social Imaginary is laid bare. Central to the ecocentric perspective is that humankind is a-part-of nature, whereas the anthropocentric perspective tends to see humankind as apart-from nature (Hornberg 2009). This then allows exploitation of nature, and the acceptance of enclosure and externalities. To reject nature, and to focus solely upon culture, as the Modern Social Imaginary has done, is to fail to understand that the natural is the base, and the cultural is the superstructure; the base changes slowly and all life on Earth is a consequence of all previous life; it is those conditions that all current life flourishes in. To change or harm the base is to threaten all life that flourishes in those conditions (Holmes Ralston III 2012). The cultural superstructure can change and can take many forms and can change much more rapidly. Culture is defined and shaped by human activity, but it can only do this on a natural base, the eco-commons.
Within ecocentric thought there is the need to develop an understanding that humans are part of the web of life (Capra 1997) so that they can, in Howard's (2008:304) view, ‘truly dwell on and care for the earth’. This is because humankind has not made nature, but has been made by it (Pratt et. al. 2000:55). Within ecocentrism this means accepting that humans are part of an ecological system, and that all systems are mutually dependent. This also means being a-part-of complex interdependent systems of different types of animals, plants, rocks, soils, air and water. The life conditions are constant (clean air, water) whilst the biotic community is variable (different types of plant, animal). All life needs the same basic elements, but the form that the life will take will vary according to the conditions produced by those elements (Odum 1997). This often leads to the base (abiotic) being unseen, whereas the biotic community is seen. Within the Modern Social Imaginary this base is often ignored, or worse, exploited. An ecocentric perspective emphasises the need to see humankind as being dependent upon these life conditions and also interconnected to the other forms of life that live alongside them, in order to understand that the flourishing of humankind is inextricably linked to both optimum life conditions and the biodiversity of other life forms. According to Pratt et. al. (2000:127), ‘to say that humans, and the animals, plants, rocks, soil and water they live amongst, belong to the same community is being used to express the dependency of human wellbeing on the wellbeing of the environment.’ The two are linked.

The key to ecocentrism is to see all life as evolving from the same source, for having the same conditions necessary to live and to evolve. This is not the same as saying that all life has the same right to flourish; if smallpox flourishes, then humankind does not! What it does mean is that there is a need to focus upon the eco-commons of clean air, clean water, fertile soil, biodiversity (Princen 2005), where the eco-commons are the life systems that all life forms are dependent upon. A key problem with this is that there may be a conflict between caring for humans as against caring for nature (Holmes Ralston III 2012).
Holism, systems

The Earth sustains life within the ecosphere, ‘all the life and interacting nonliving materials (all the ecosystems)’ (Odum 1997:31), where an ecosystem is a biotic community (all the populations living in a designated area’) and ‘the nonliving environment function[ing] together’ (Odum 1997:31). Within the ecosphere is the biosphere, which ‘is the widely used term for all of the earth’s ecosystems functioning together on a global scale’ (Odum 1997:31), ‘the lithosphere (the rocks, sediments, mantle and core of the earth), the hydrosphere (surface and ground water) and the atmosphere’ (Odum 1997:31). All of these interact together to support and sustain life. Whilst they can be studied in isolation, they cannot be understood unless the ways in which they interact and connect are looked at. This requires the study of systems or holistic study. The ecosphere is a very complex system, and as Goldsmith (1996:25) points out, ‘the coordination of the behaviour of the parts by the whole is only apparent once one has identified the whole’. It has nested systems, all of them linked to each other in a hierarchy (Odum 1997). This hierarchy does not mean that the higher has precedence, but that all of the parts relate to each other. This can be contrasted with reductionism in the Modern Social Imaginary, which favours studying the smaller when looking at complex matters (Odum 1997:34) rather than holism, which acknowledges that ‘ecosystems sustain themselves in a dynamic balance based on cycles and fluctuations, which are nonlinear processes’ (Capra 1982: 25).

Ecological criticality

Ecological criticality means understanding that humankind lives in a ‘full-world’, and that the practices that were used in the ‘empty-world’ are no longer relevant, as it was they, according to Princen (2005:43), that got humankind into the position they are in. The reliance upon the eco-commons means that to damage it is to threaten all life and life-processes, and that to be ‘ecologically rational’ (Princen 2005:26) means applying reason to the eco-commons, thus making it different to rationality in the Modern Social Imaginary, where it is scientific and economic rationality. It is to understand that to harm the eco-commons is to harm life itself. To harm the eco-commons for trivial goods and money is ecologically irrational.
In ecological criticality it is accepted that not everything is knowable, and that what is known is uncertain. Stannard (2010:2) posits that there are limits to what humankind can know, that ‘there will remain questions that [they] shall never be able to answer’. Some things are so complex, or beyond human senses (even when enhanced by technology), that it is wise ‘to be cautious about claims that it is only a question of time before it [the human brain] will have unlocked all of nature’s secrets’ (Stannard 2010:2). Popper (1972) also warns against certainty. For him, humans need to problem solve, to conject and refute, to test for falsibility. This leaves knowledge as provisional, for if ‘all theories are hypotheses; all may be overthrown’ (Popper 1972:29). This implies that humans need to be tentative in how they approach things, to not look for certainty, and definitely not to act as if things are certain. There is a need to confront the complexity of life, to accept that not everything is knowable or controllable.

Finally ecological criticality means a focus upon the biophysical. When using resources it means using ‘a rationality tied to the biophysical and social conditions of that resource’ (Princen 2005:27). To see it as a commodity is to ignore the biophysical. Some natural resources need to regenerate; others are limited, in that they are irreversible in use. To ignore this is to use resources with no regard for the longer –term.

Ecological criticality is the rejection of ‘a technological and economized world where being and thinking have been seduced and absorbed by the formal and instrumental rationality that dominates modernity: by calculation and planning, by determination and legality’ (Leff 2005:2) that assumes that humans can understand and control the natural for their own use.

Sufficiency

A key value within the Ecological Social Imaginary, Princen (2005:18) suggests, is sufficiency, ‘a sense of ‘enoughness’ and ‘too muchness’, a quality where concern for excess is paramount in the life of an individual, an organisation, or a nation’. This implies that humankind needs ‘to engage in
interrelatedness, to avoid excess, to take long-term impacts and displaced costs into account, and to avert irretrievable diminution of ecological integrity' (Princen 2005:18) leading to a rejection of material gain and character based upon entrepreneurism (Sim 2010). Princen (2005:9) asks ‘how much is enough and how much is too much?’ Enoughness and too muchness become key limits, and this puts limits, ecological limits, on how much humans need to flourish. This then implies a refocusing of values not towards growth and progress, but towards quality of life and wellbeing, where more is not better. Implicit within this is a reworking of the ends of humankind, about purpose. A life of consumption and acquisition could destroy the very thing that gives life; a life of sufficiency may well enable the life systems to continue supporting life as it is currently constituted. Progress is based around an ‘empty-world’, where humankind can always move on. Humans now live in a ‘full-world’, and that, Princen (2005: 26) suggests, requires a new way of thinking

From sufficiency is derived other values, such as moderation, thrift, frugality, prudence, temperance, reverence, fairness, equity, usefulness and excess (Princen 2005:7). It also encompasses sustainability, which is defined in terms of ‘not exceeding assimilative and regenerative capacities’ (Speth 2008:119). This encourages restraint, as it is difficult to continue to grow infinitely on a finite planet. Overconsumption, the use of resources beyond their regenerative capacity and the rising CO2 levels caused by over-use of fossil fuels, all threaten entire species (Princen 2005:10). These ‘critical environmental threats’ (Princen 2005:11) are amplified by rising human populations and rising wealth. All of this is leading, Gardiner (2011) claims, to a ‘perfect moral storm’ (and also a perfect ecological storm), when a confluence of factors and tipping points threatens the life support systems of Earth (Princen 2005).Lasch (1991:532) indicates that this will have an impact upon industrial nations, as it implies what he terms ‘a more modest standard of living for all’. Whereas the Modern Social Imaginary promised rising living standards for all, the Ecological Social Imaginary sees a levelling out, so that less goes further.

By having enough to meet basic needs humankind can concentrate upon quality of life issues. Instead of efficiency and wealth as purveyors of wellbeing,
Diener and Seligman (2004:4) propose a focus upon wellbeing as pleasure (positive moods, positive emotions), engagement (absorption in what one is doing) and meaning (belonging to and serving something larger than the self). This leads to wealth being ‘redefined as that which provides us with the freedom to become unique individuals, the freedom to live together with others being equal and different’ (Beck 2010:262). It means living off the interest of the planet, not the capital, and is not about monetary wealth and personal gain. Fielding and Moss (2011) proffer an ethics of care, which encompasses the self, other humans, species and the physical environment; and an ethics of an encounter, in which humankind recognise others as others, not as the same as themselves, which means accepting them as different, rather than trying to fit them into their preconceived categories. They also see prosperity as flourishing, rather than continual economic growth. It is by re-framing concepts such as economy, wellbeing, wealth and prosperity in terms of ecology, rather than money, things and consumption, that could enable the continuance of life on Earth as it is currently constituted.

This means ensuring that organism and eco-system functioning needs come before human application. Both efficiency (Princen 2005) and wealth (Speth 2008) have become an end rather than a means. It meets basic survival/poverty needs, but not quality of life issues (Wilkinson and Pickett 2009, Skidelsky and Skidelsky 2012). Speth (2008:126) argues that consumption of consumer goods cannot meet social and psychological needs – real, lasting, authentic needs that promote ‘the wellbeing of people and nature’. According to the Royal Society (2012:84) ‘one of the major obstacles to achieving human wellbeing in a sustainable way is that the conventional model assumes that consumption growth is the key to improved wellbeing’, where ‘wellbeing means having enough material resources, health, freedom of choice and action, security and good social relations’ (Royal Society 2012:85). Sufficiency enables humankind to focus upon their own and the planet’s wellbeing.
7.6 Conclusion

Having examined the challenges of the 21st Century in Chapter 5 it was suggested that the challenges were to do with humankind’s relationship to the planet that they lived and depended upon. These challenges were global in the spatial domain, future-orientated in the temporal domain and ecocentric in the ontological domain. Chapter 6 examined whether the Modern Social Imaginary could meet the challenges in the domains, and it was concluded that it could not, hence a new social imaginary was needed. Sections 7.4 and 7.5 were an attempt to frame an Ecological Social Imaginary.

The root metaphor of the Ecological Social Imaginary was identified as Organicism, with the organism being its exemplar. An organism is linked to its environment in an inter-connected manner. This metaphor enables a language and consciousness to develop which leads to a ‘new normal’, one in which humankind live in harmony with other life forms and life-processes in order to work within biophysical constraints. In this way humankind ontologically become a-part-of nature and epistemologically accept that it may not be possible to know everything, that their knowledge is fallible, and that human existence relies upon the foundational truth, that humankind depends upon the life-processes of the Earth, and the life-forms that live upon it.

From the ontology and epistemology can be derived a set of values that would begin to shape the unstated and unarticulated ideas and practices that would enable humankind to know, interpret and live in a world shaped by the Ecological Social Imaginary. These values, of ecocentrism, transcendence, intergenerational concern, a future-orientation, holism, ecological criticality, globalism and sufficiency, are, it was argued, those that may well enable humankind to meet the challenges of the 21st Century.

Chapter 8 builds upon these values to examine what education may look like in the Ecological Social Imaginary.
Chapter 8: Education in the Ecological Social Imaginary

8.1 Introduction

In Chapter 2 it was suggested that education has a key role to play in the forming of persons, and that the form of those persons was one that was developed within a social imaginary. Chapter 7 outlined the Ecological Social Imaginary as a possible answer to what an emerging social imaginary may look like that meets the challenges of the 21st Century. Chapter 7 concluded with the identification of a set of core values that defined the Ecological Social Imaginary. This chapter develops these core values into educational form, one that may enable the forming, legitimating and perpetuating of a perspective that focuses upon the relationship between humankind and the planet in a way that enables all life to flourish.

In Chapter 7, one of the core values within the Ecological Social Imaginary was holism, of seeing how different systems interact together. Bánáth (1991) outlines a strategy of systems design of education that aligns systems theory and education design. To do this he suggests a process of core values that create a vision. These core values then generate core ideas, which create an image ‘based on the core values and core ideas’, which leads to a ‘design of the system that will bring the image into reality’ (Bánáthy 1991:124). The core values of the Ecological Social Imaginary were developed in Chapter 7.5.4. This chapter develops these by firstly identifying a vision based upon them. A vision of education that reflects the values of the Ecological Social Imaginary, and will be developed in section 8.2, is Connective Education, which embeds the core value of holism. Connective Education connects human abilities to the planet: the human world and the natural world. An educational metaphor for the natural world, a web, will also be outlined in this section. The core values of the Ecological Social Imaginary will then be examined for core educational ideas, which will be developed in section 8.3. From the core educational ideas will be created an image of the human part of Connective Education, and this will be developed in section 8.4 through the generation of a complementary metaphor to the web, one which unites all human abilities: head, hands, heart and spirit. Human abilities are shown through the metaphors of: the head, which
represents cognitive ability in seeking truth; the hands, which represent activity in the production of beauty; the heart, which represents emotion in the seeking of goodness; and the spirit, which represents making connections by engaging in good acts.

The design level of Bánáthy’s system is not developed here as this chapter is organised around the idea of a ‘hierarchy of nested systems’ (Sterling 2001:33, Salthe 1985), and concentrates upon the macro level (see figure 8.1). The Biophysical and the Ecological Social Imaginary systems have been outlined in Chapters 5, 6 and 7, making the case for why change is needed. This chapter outlines what education in the Ecological Social Imaginary may look like, and in so doing touches upon the micro level, in that it is through education that a particular person, the who, is developed. The meso level is mentioned only implicitly, as this thesis is outlining education in the Ecological Social Imaginary, not detailing it.

Figure 8.1 Hierarchy of nested systems (Salthe 1985, Bánáthy 1991, Sterling 2001)
8.2 Vision – Holism and systems to Connective Education

The Modern Social Imaginary and its approach to education, it was argued (3.5.4), has disconnected humankind from the planet upon which it depends for its existence. This disconnect has led to humankind treating the planet and its resources as if it was there solely for its own use, of treating a planet of finite resources as if it had infinite resources. Education played its role in perpetuating this outlook, which was anthropocentric, contempocentric and national. Chapters 5 and 6 investigated the evidence that humankind has begun to cause change on a global scale, threatening the eco-commons upon which all life depends, and threatening future life. What was needed to meet the challenges of global change, it was concluded, was a social imaginary that moved from the anthropocentric to the ecocentric in the ontological domain; from the national to the global in the spatial domain; and from the contempocentric to the future needs of life in the temporal domain.

LeFay (2006:43) suggests that if humans ‘are to make the shift to an ecological worldview, then the principles of ecology must become the principles of education’. The foundational truth, outlined in Chapter 2, underlying this way of thinking, is that all human life is underpinned by ecological connections, what Berkowitz et. al. (2005:235) term ‘the ecological basis of human existence’. To ignore this foundational truth is to risk damaging the very thing that all life, including humankind, relies upon (Alcamo 2003). It is the dependency of the biotic upon abiotic elements within systems that matter, as human beings, ‘along with all other living creatures, are wholly dependent upon this system for their biological existence and support’ (De Witt 2012:3). Education then, within the Ecological Social Imaginary, would need to mirror ecological communities, to use ecological principles, and to develop ecological thinking (LeFay 2006). For LeFay (2006:36) the

‘key to this transformation lies in education. Not the same education that got [humankind] into this mess, but a new paradigm for learning as a transformative process, leading to a deep awareness of [their] interdependent place within the dynamic web of life, and a re-enchantment of the world as a powerful mystery. Education can and must be redefined and transformed to become itself a transformative process, such that [humankind] learn to see
the world holistically and act to protect, respect and restore the Earth, [their] living home’.

In order for humankind to do this there is a need to re-connect with the planet upon which they live and depend, what will be called, using an undeveloped phrase taken from Orr (1992:138), ‘connective education’.

If education within the Modern Social Imaginary can be seen as ‘dis-connective’, in that it reflects what Kumar (2013: 152) calls the ‘old paradigm of fragmentation, dualism, disconnection and division’, then, following Orr (1992), connective education is about ‘a new paradigm of wholeness, connectedness and relatedness’ (Kumar 2013: 152). Echoing the temporal, spatial and ontological domains of the Ecological Social Imaginary, Orr (1992:138) states that the first aim of connective education is

‘the establishment of a community of life that includes future generations, male and female, all races and nations, and the natural world. The essence of community is the recognition, indeed the celebration, of interdependence between all parts’.

For Schumacher (1973: 73) education is primarily about ‘the transmission of ideas of value, of what to do with our lives’, and this leads to the ‘second aim of connective education [which] is personal wholeness and transcendence’ (Orr 1992:138) in which ‘learning was aimed to achieve mastery in the art of life’ (Orr 1992:138). It is through these two aims, of the community of life and personal wholeness, that connective education aspires to produce the ‘kind of people necessary for the trials of building a sustainable global civilisation’ (Orr 1992:139). Connective education is about connecting humankind with their attributes and abilities in the widest sense, and with the exercise of these on the planet upon which they live and depend. In order to develop Connective Education further there is a need to identify its educational metaphor.

The idea of root metaphors (3.5.1) and educational metaphors (4.1) has been developed throughout the thesis. In the Pre-modern Social Imaginary the root metaphor was the chain (3.4), with the educational metaphor being the cycle (4.1). In the Modern Social Imaginary the root metaphor was the machine (3.5.1), with the ladder being the educational root metaphor (4.1). Chapter 7.5.1
identified the organism as the root metaphor for the Ecological Social Imaginary. This section identifies an educational metaphor for the Educational Social Imaginary.

Commoner (1971), when devising his ‘Four laws of ecology’, states law 1 as ‘Everything is connected to everything else’. To do this Orr (2004:2) argues that it is necessary to ask the ‘timeless question of how we are to live? and for him ‘the great question is how we will live in light of the ecological fact that we are bound together in the community of life, one and indivisible’. A way of metaphorically showing how the community of life is ‘bound together’ is the web, particularly its use in the ‘Web of life’ (Orr 1992, Capra 1997, LeFay 2006). In the context of education in the Ecological Social Imaginary, a web is an appropriate educational metaphor, in that it is not hierarchical, there are no stages to climb, and in a web each part is linked to every other part; in short, it connects everything in a systematic and holistic manner (table 8.2). It is also natural, and used often in everyday speech.

<table>
<thead>
<tr>
<th>Root metaphor</th>
<th>Educational metaphor</th>
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<tr>
<td>Pre-modern Social Imaginary</td>
<td>Chain</td>
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<tr>
<td>Modern Social Imaginary</td>
<td>Machine (mechanicism)</td>
</tr>
<tr>
<td>Ecological Social Imaginary</td>
<td>Organism (Organicism)</td>
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Table 8.2 Root and educational metaphors

The vision of Connective Education is the development of personal wholeness, so that all human attributes and abilities can be exercised on the planet to maintain the community of life, the web of life, in order to develop persons who can live in harmony with their planet: it is the linking of the human world to the natural world. This essentially relies upon the core value of holism and systems thought. The next section develops further the core values of the Ecological Social Imaginary into core educational ideas.
8.3 Core values to core educational ideas: from the Ecological Social Imaginary to Connective Education

In chapter 7.5.4 a series of values were identified that gave structure and purpose to the Ecological Social Imaginary (ESI). These core ESI values, of holism, sufficiency, intergenerational concern, a future-orientation, ecocentrism, ecological criticality, globalism, and transcendence need to be developed into core educational ideas. The core ESI value of holism/systems was identified as being central to the vision of Connective Education (8.2), and so will be indirectly developed below. The latter seven core ESI values are examined for their educational implications for learners through Connective Education.

8.3.1 Sufficiency to Wellbeing

In 7.5.4.3 sufficiency was identified as being about ‘enoughness’ and ‘too muchness’, and knowing the difference. This meant living a life that focused not upon acquiring material goods, but of one that looked at personal and planetary wellbeing. Wellbeing in Connective Education is de-materialised, in that it does not rely upon happiness based upon objects or approval by others, but upon contentment through control of one’s own emotions (Phillips 2009). Phillips (2009) calls the former happiness as feeling, and the latter as happiness as authenticity. Happiness as feeling is short-lived, ephemeral and needs constantly renewing through more hedonistic experiences, whereas happiness as authenticity occurs when ‘observable behavior is consistent with … internal values, innate talents and desires’ (Phillips 2009:175); it is thus selfless rather than selfish. In this sense, ‘wellbeing is inseparable from well-doing’ (Phillips 2009:175), thus linking wellbeing to practical wisdom (8.3.3.1), and to Aristotle’s notion of eudemonia. Happiness as authenticity means learning about who you may be and what you do, not what you own or have. In that sense it is easier to control and regulate, and to develop, as it depends upon the individual’s internal resources rather than material possessions. Maiteny (2009) questions whether a non-material emotion such as wellbeing can be achieved through the acquisition of material objects.
To develop wellbeing as expressed above, there is a need to align with ecological principles as set out in ecological criticality (8.3.4). This means attending to the foundational truth of everything deriving from, and depending upon, the Earth. Alcamo et al. (2003:78) suggest that wellbeing is dependent upon what they call ecosystem services. At the centre (see figure 8.3.1) are supporting services such as soil formation and nutrient cycling upon which all other services depend. This supports further ecosystem services such as: provisioning services which are products obtained from ecosystems; regulating
services, which are benefits from regulation; and cultural services, which are the nonmaterial benefits. This provides the basis for the determinants and constituents of wellbeing such as health, security, good social relations, freedoms and choice, and the basic materials for a good life (Alcamo et. al. 2003:78). Central to wellbeing is the idea of sufficiency, of knowing when enough is enough (Princen 2005). By focusing the learner upon the nonmaterial, of happiness as authenticity, then the material aspects of life are reduced to that which is enough for wellbeing. This provides time and energy for the learner to pursue other aspects of life, and for learners to consider what this may be. It also enables learners to engage with what enoughness is, and to see that the opposite of wellbeing is illbeing. Bennett et. al. (2012) argue that poverty, both of access to ecosystem services and to wellbeing, fits this definition of ill-being, and falls upon the poor with greater effect, both directly and indirectly. It is this distribution of resources that learners can also engage with when looking at wellbeing. The tendency to live indoors, and when indoors to live within the mind through technology has led to a disconnect (8.3.3.2), but also may well contribute to ill-being (Thompson 2013).

By understanding the relationship between ecosystem services and wellbeing, then learners can begin to see the importance of looking after their personal wellbeing, and the wellbeing of the planet and life forms upon it, upon which they live and depend. The re-connection to nature, and being mindful of the world around them can help learners to focus upon their wellbeing through living a good life (8.3.7).

8.3.2 Future orientation and intergenerational concern to Stewardship

In chapter 7.5.4.2 future orientation and intergenerational concern were identified as important to the Temporal Domain of the Ecological Social Imaginary. A future orientation means being aware of actions now, and how they may impact upon the future. Intergenerational concern means thinking about those who are to come, and the world that may be bequeathed to them. Both these values suggest thinking beyond oneself and the now, to see the Earth as being held for not just current generations and life, but for others, not
yet born: it is about seeing humankind as acting as stewards of the Earth (Steffen *et. al.* 2007). Bryden and Hart (2000:7) remark that ‘stewardship is about looking after something not for oneself, but for another or others’. This begs the question of what the ‘something’ is, and who ‘the others’ are that enable learners to be stewards. For Kevany (2007:113) it is about looking at personal ‘gifts, privileges, and abilities and recognising that these are to be used to benefit others beyond self’ and also engaging in community life with an understanding as to how ‘choices and actions impact others’. This links with both transcendence (8.3.7) and practical wisdom (8.3.3). McCuddy and Pirie (2007:958) extend the idea of stewardship to suggest that humankind’s actions ‘transcend different time periods or different generations’ so that decisions have to be made ‘in the best interests of future generations as well as the current generation’. De Witt (2012:7) further extends this by including the individual and community as part of stewardship, but also suggests that it is about dynamically shaping and reshaping human behaviour so that ‘biospheric sustainability in accord with the way the biosphere works’ is the fourth ‘other’. Thus in answering who are the ‘others’ in stewardship, the answer is the individual, the community, future generations and the biosphere. In answer to the ‘something’, De Witt (2012:14) is emphatic when stating that humankind ‘have become stewards of the biosphere’. A degraded biosphere will impact upon the individual, the community (both cultural and natural) and future generations (both human and other life forms), so as conscious actors within the biosphere learners come to recognise that humankind’s stewardship role is to ensure that their actions do not harm the biosphere.

This discussion suggests that humans are stewards of the cultural and eco-commons. This suggests learning that they are held in trust for all living humans, those not yet born, and current living and non-living entities. This does not denote superiority to humankind, but does recognise that whilst the actions of other life forms are self-regulating, and non-living actions (such as volcanic eruptions) cannot be controlled, human activity can affect the sustainability of biotic and abiotic life. It is this conscious understanding that human actions can have potentially harmful or unintended consequences that makes stewardship so important for learners (Rasmussen 1996).
In terms of Connective Education, Bennett et. al. (2012:36) seek ‘a global education that prepares students for effective stewardship of the global commons’. What is also suggested within the social and cultural is an understanding of how the Earth has developed, and the impact of humankind upon it. There is also a need to engage in debate about what constitutes the ‘global commons’, and this brings with it discussions and debates about power and justice. Nichols (2011:12) notes that it could be useful to adapt and renew some of the spiritual connections to the land made by indigenous and traditional cultures.

8.3.3 Ecocentrism

In 7.5.4.3 Ecocentrism was seen as a core value within the ontological domain. This meant understanding and acting upon the foundational truth, that all life is dependent upon the eco-commons, that humankind is a-part-of the life-processes and life of the planet. In Connective Education terms this means re-assessing how humans act upon the planet, where they act and belong, and what they do when they act: this requires the learner to develop practical wisdom (8.3.3.1), a sense of place (8.3.3.2) and how manipulating the outdoors (8.3.3.3) and appreciating the outdoors (8.3.3.4) connects their abilities with the natural world.

8.3.3.1 Ecocentrism to Practical wisdom ‘acts of doing’

Practical wisdom, or what Jarvis calls ‘acts of doing’ (2012:4), link both the practical and the wise. For Allison et. al (2012) practical wisdom is about understanding the real significance or worth of something. In terms of Connective Education this means the learner understanding their personal values about the environment, linking those values to knowledge and then acting based upon the values and knowledge (Berkowitz et. al. 2005:230). In this sense Connective Education is learning by doing, but in a values context. Saugstad (2005:360) states that learners ‘learn best by doing what [they] are to learn in the situation where it is to be applied’: in order to learn about life and life-processes this is best done in the natural world. It is by the learner
producing and acting in the world in an ethical manner that goodness is
developed (Saugstad 2005).

For Orr (1992:147) this means the learner making the ‘leap from “I know” to “I care” to “I’ll do something” ‘: from knowing, to valuing, to acting. It is through interaction with the environment, through learning to do and to make things of value and of use without damaging the environment, the linking of doing and valuing, that practical wisdom is developed. It is through self-efficacy that this is done, by learning and acting upon personal values in respect to the environment (Nicholson 2011). Jarvis (2012:8) underscores this by stating that ‘Life is a quest for meaning and wisdom is the way in which we respond to it’ so that ‘wisdom is about practical living’. In this way practical wisdom has a strong link to Transcendence (8.3.7).

8.3.3.2 Ecocentrism to Place [local], disconnect, disembodiment

In a world that is increasingly urban, mobile and reliant upon technology (Nichols 2011), there is a danger of humans being disconnected and disembodied from their lived experience of the natural world, the very thing that they and other life forms depend upon (Bowers 2006). As all living things inhabit an ecosystem, and as ecosystems are located in space, Connective Education sees the re-connection with place as central to humankind’s engagement with the world. Place can be seen on two levels; there is the immediate place where things live (their locality), and those places are nested in a global network (the world). The global aspect is dealt with in section 8.3.6, although being nested they are linked to each other.

Thomashow (1995:xvii) asks ‘What do I know about the place where I live? Where do things come from? How do I connect to the earth? What is my purpose as a human being?’ To answer these means the learner being aware of where they come from, and what it is about their community that gives it its identity, its ‘sense of place’. This is more than knowing your way around, it is
looking at how the cultural and the natural interact, about how one is reliant upon the other; it is in place that learners enact their practical wisdom (8.3.3.1).

Disconnection from the local place has both a cultural and a natural effect, as being disconnected from the things that sustain life can mean the failure to understand the consequences of actions (Edelglass 2009:2). This means that through an understanding of place learners can examine the ‘ongoing relationships between the cultural practices that characterize daily life and the natural systems that make life possible’ (Bowers 2006:36), so that the basic principles of ecology (ecological literacy) ‘can be applied and embodied in the daily life of human communities’ (Capra 1999:2). By understanding the local community and environment, the factors that enhance or degrade life can be examined (Nichols 2011) and acted upon (thus linking again with practical wisdom).

The greater understanding of how ecological principles impact upon the local place also implies a cultural examination of how humans use and interact with the environment. As all living things are dependant upon the ecosystems in which they live, there is a need to look at the possible tension between the commons and enclosure (Bowers 2006); can both exist together? What things is everything reliant upon? Is it fair to restrict access to things that might be common (such as clean air, clean supplies of water)? This suggests that learners need to develop respect for others, looking at differing perspectives, democratic participation, communication and conflict resolution skills (Nichols 2011). This needs to be applied to the local place, blending knowledge of individuals, cultures, organisms, ecosystems and generations, and how they interact and influence each other (Nichols 2011). As Hay (2002) notes, learning to care for a place means taking responsibility for it.

8.3.3.3 Ecocentrism to Outdoor [manipulating]

For Orr (1992), education in the Modern Social Imaginary has become an indoor activity, where teaching and learning is done ‘mostly within closed walls in modern buildings where classes are held under artificial light and with
artificial air conditioning’ (Kumar 2013:112). It has also become a reading (i.e. a cognitive) activity. As Orr (1992) sees ecology as applied learning, then in order to understand ecosystems there is a need to engage with them, and this can rarely be done in classrooms or by simulations, however good. A Forest School could be seen as a good example, but they tend to be currently used for raising self-esteem, rather than for ecological learning (Shields 2010). This is because they exist within the Modern Social Imaginary, and their purpose is to create conditions to ‘raise standards’, rather than to engage with the natural world in order to understand it.

Being outdoors enables the learner to engage with nature, by planting, digging, shaping and making, using materials that have been grown or found by the learner. This could range from picking then cooking food, to making artifacts or art. It is through manipulating natural resources that their origins, structure and needs can be understood. It enables the learner to produce beautiful things. Being outdoors links local place (8.3.3.2), as the learner is in a specific place. By manipulating the outdoors there is a link to practical wisdom (8.3.3.1), and also to sufficiency (8.3.1), as the act of manipulating and making products from natural materials, and the consequent understanding of how those materials have arisen, connects productive human abilities to the natural world. This suggests that an understanding of living systems can be used to inspire design by nature (Manitoba Education 2011:1) leading to what Capra (2002:203) calls ecodesign, ‘a process in which …human purposes are carefully meshed with the larger patterns and flows of the natural world’ (8.3.3.3 and 8.3.3.4).

8.3.3.4 Ecocentrism to Outdoor [appreciating]

Whereas manipulating the outdoor was to do with making things from resources, this section is about appreciating the outdoors. This means finding connections with the outdoor world, and of seeing beauty in the natural world. It suggests both an aesthetic appreciation of natural places, and the ability to express that appreciation in a number of media. The main point here is that this is done not solely through secondary media such as televisions or books.
(important though these are), but by actually engaging with natural places so that learners can be ‘moved by mountains, forests, ponds, seashores and other ecosystems’ (Nichols 2011:12).

The affective aspect of engaging with the outdoors can lead to personal insights as well as aesthetic appreciation. It enables learners to see the outdoors from a non-instrumental perspective, to engage in ‘disinterestedness’ (Pratt et al. 2000:145), appreciating the natural world as an end in itself.

It also allows learners to understand connections; the wind that they feel on their face also has the oxygen that they need to breath; the lettuce they plant and watch grow can be eaten to nourish them. The air and the lettuce become a part of them; they are connected. It is through this that the learner can develop a sense of mystery about the beauty of the world.

For Desmond et al. (2004:49) it is through appreciating the outdoors that learners can ‘add a sense of excitement, adventure, emotional impact and aesthetic appreciation to [their] learning’. Emotions such as exhilaration, joy or euphoria can also be evoked (Mortlock 2000), and insights such as will, fortitude, limits, fear can also be developed and understood depending upon the challenges engaged with (8.3.7).

8.3.4 Ecological criticality

In Chapter 7 Ecological criticality was identified as a core value within the Ecological Social Imaginary, in contrast to the reductionist rationality found in the Modern Social Imaginary. The main aspects of Ecological criticality were the importance of the Eco-commons, the need to understand the limitations and tentative nature of humankind’s knowledge of the world, and the need to base all thought and action upon the complexity of life and the biophysical limits of the planet. This is developed by learners engaging with the core educational ideas of ecological literacy (8.3.4.1), complexity theory (8.3.4.2) and an understanding of their ignorance (8.3.4.3).
8.3.4.1 Ecological criticality to Ecological literacy

A key aspect of Ecological criticality is the learner’s knowledge of how the natural world works, and the skills and dispositions to go with using that knowledge, what is known as ecological literacy (Orr 1992, Berkowitz et. al. 2005, Capra and Stone 2010). Orr (1992:86) states that ‘ecological literacy is driven by the sense of wonder, the sheer delight in being alive in a beautiful, mysterious, bountiful world’, and this clearly links with transcendence (8.3.7).Whilst this gives a lyrical overview, it does not develop what the learners learn. Capra and Stone (2010:22) see ecological literacy as being the ‘ability to understand the basic principles of ecology, coupled with the values, ability, and fortitude to act on that understanding’. In terms of Connective Education this fits better, as having knowledge and understanding is of limited use unless action arises from it, giving knowledge to practical wisdom (8.3.3.1)(Manitoba Education 2011). Ecological literacy then enables the cognitive development of the learner in their quest for truth. It does this by enabling the learner to firstly ‘use ecological understanding, thinking and habits of mind for living in, enjoying, and/or studying the environment’ (Berkowitz et. al. 2005:228), which looks at the human side of this, and secondly to develop their ‘understanding of the principles of organization that ecosystems have evolved to sustain the web of life’ (Capra 2002:203), which focuses upon the natural side.

In Connective Education Ecological literacy is about developing key ecological thinking, and allying those with skills and attitudes that enable the application of the knowledge to the world around the learner. Berkowitz et. al. (2005:234) identify three key elements of ecological literacy: the need for learners to understand key ecological concepts and knowledge; the learner’s development of the ‘disposition, skills, and capacity for ecological thinking’; and the societal application of ecological knowledge by the learner. The former is to do with the concepts and knowledge needed for ecological literacy, the latter two for the competencies, cognitive skills and dispositions that enable ecological literacy to be enacted (see figure 8.3.4.1).
The first element of ecological literacy is key ecological thinking (Berkowitz et al. 2005:234), which is defined by Capra (2002:202) and Kensler (2012:802) as a set of core ecological concepts, that consists of: networks that connect; cycles that use matter and energy at different levels; solar energy; partnership of species; diversity which leads to resilience; dynamic balance of feedback loops; and development, which is to do with change.

Nichols (2011) develops this with specific content, so that learners should know about basic thermodynamics, understand ecological principles, essential biology, the need to know about Earth systems, and to this Baum (2013:2) adds Astrobiology, ‘the study of life in the universe’. Through all of this learners come to understand what Allison et al. (2012:46) call the ‘meaningful interconnectedness of knowledge’.

The second element of ecological literacy are the dispositions, skills, and capacity for ecological thinking (Berkowitz et al. 2005:234). Nichols (2011)
argues that there is a need to develop the skills of scientific reasoning. To do this it is necessary to understand the nature of science, to develop critical thinking and the skills of investigation, linked to creativity, open-minded scepticism and uncertainty. This latter links to Popper’s (1963) notion of fallibility, and it is this, linked to the subject of study, ecology, which makes this set of processes different to science in the Modern Social Imaginary. It is through the development of critical thinking skills that connections between actions (8.3.3.1), the health of natural systems (8.3.2) and community wellbeing can be made (8.3.1) by the learner (Monaghan and Curthoys 2008:12).

The third element of ecological literacy (Berkowitz et. al. 2005:234) is the societal application of ecological knowledge, which consists of historical ecology, and personal motivation and values. Historical ecology links to the idea of fallibility, in that ideas, values and views of the environment from the past have changed. It also looks at the legacy of both natural and human impacts upon the Earth, covering historical time, ecojustice, ecological economics, pollution and health and the precautionary principle (Nichols 2011). Personal motivation and values links strongly to practical wisdom (8.3.3.1) in that there is inherent within ecological literacy the need to see it as an active endeavour, whereby the learner’s knowledge is applied to specific places (8.3.3.2).

8.3.4.2 Ecological criticality to Complexity

Complexity theory is concerned with large systems or wholes, and the relationship between the elements that make up the whole (Mason 2008), rather than looking for the smallest particle as in reductionist science. It is the interaction and connection of many different and diverse elements and agents within a system that is its prime focus (Mason 2008). It is very difficult to predict and control these elements and agents, so that learners need to understand that ‘change is ubiquitous, and stability and certainty are rare’ (Morrison 2008:16) meaning non-linear and unpredictable outcomes. Organisms react to the conditions in their environment, adapting and responding in a self-regenerating and self-perpetuating manner; if they do not then they will likely not survive. Everything is connected, with co-operation for mutual survival, and competition for development (Morrison 2008). What can happen is complexity
within the interactions in an environment, and complexity in the outcomes of these interactions, making prediction very difficult. This means that the learner’s understanding of the environment needs to move from a simple, linear, reductionist model, to one that is complex, non-linear, holistic, and looks at systems that are both interconnected and interdependent (8.3.5).

For Morrison (2008:22) ‘[c]omplexity theory stresses people’s connections with others and with both cognitive and affective aspects of the individual person’: it is both connective and holistic. If what is studied is complex, then so is what is learnt, in that it cannot be pre-determined what a learner will gain from their interaction with the environment, and in this way learning ‘is dynamic, active, experiential and participatory, open-ended, unpredictable and uncertain’ (Morrison 2008:22). There is also the need for multiple perspectives as complex systems ‘originate from multiplicity, and they originate and require a multiplicity of points of view to be described’ (Colucci-Gray et. al. 2006:229). What this suggests for the learner is seeing the whole, learning done in context, multiple viewpoints, and learner defined learning.

8.3.4.3 Ecological criticality to Ignorance

Ignorance links back to Popper’s fallibility epistemology, and is also a reaction to the Modern Social Imaginary and the assumption that all can be known, predicted and controlled. Harremoe’s et. al. (2001: 193) advocate that there should be ‘a focus on ‘what we don’t know’ as well as on ‘what we do know’. To do this they devise levels of proof to enable the learner to acknowledge scientific uncertainties. The lowest level is risk, where there are known impacts and known probabilities (such as the use of asbestos) and the outcome should be prevention. The next level is uncertainty, where there are known impacts, but unknown probabilities (such as the effect of animal antibiotics upon humans), and the outcome is use of the precautionary principle, to reduce or eliminate the potential harm. The final level is ignorance, where both impacts and probabilities are unknown (such as CFCs in the early 1970s), and the outcome would be precaution, with further research to anticipate potential outcomes (Harremoe’s et. al. 2001: 192). What this does is
foreground that humankind cannot know the outcomes of all of their actions in a complex world, and that by acknowledging their ignorance, there is a greater likelihood of considering multiple options, with the ultimate outcome of not developing things if there is a potential harm. It also highlights that there may be limits to human knowledge, and that actions can have unintended consequences.

It is through learners understanding and applying their knowledge of ecological principles to where they live and how they live that the core Ecological Social Imaginary value of Ecological criticality is enacted. Ecological literacy, complexity and understanding of ignorance enable the learner’s cognitive ability to be developed in the search for truth, both about the workings of the Earth, and humankind’s place upon that Earth.

**8.3.5 Ecological criticality and Globalism to Interconnectedness, interdependence**

Ecological criticality, whilst enacted in the local place (8.3.3.2) also develops the learners understanding and awareness of the planet upon which they live and dwell. In this way there is a direct link with the core value of Globalism (7.5.4.1), both in a cultural and a natural sense: humankind is connected to each other in a global way, and the Earth works using globally interdependent systems.

Whilst aspects of interconnectedness and interdependence were discussed under ecological literacy, and were thus part of the cognitive aspect of Connective Education, the notion of interconnectedness and interdependence here focuses more upon the affective. Whereas Ecological criticality deals with truth and theoretical aspects, interconnectedness and interdependence deals with the learner’s understanding of goodness and the practical making of judgements.

Humankind, as part of the living world, has evolved alongside other life forms. It is through the evolutionary process that humankind is connected to all other life forms (Wilson 2002). Humankind is also dependent upon biotic and abiotic processes, and many of these are also dependent upon human actions,
but also threatened by human action. To harm these is to threaten humankind; in that sense all life forms are dependent upon each other. If the evolutionary process is an explanation of the development of life on Earth, then the evolutionary process derives from the development of the Earth, which is a part of the development of the Universe through the Big Bang Theory. In this sense everything is connected to everything else, and it is the fascination and wonder of this that is developed through this aspect of Connective Education.

Within the natural world this means the learner developing a sense of belonging and contact, with ‘direct contact with the natural aspects of a place, with soils, landscape, and wildlife’ (Orr 1992:89), and also to see what different cultures have ‘discovered about our common humanity and our common habitation of this planet’ (Bennett et. al. 2012).

This needs to link with ecological criticality (8.3.4) and ecological literacy (8.3.4.1) for this enables humankind to understand the ‘complexity of living systems and a notion of human beings as dependent on the natural context’ but is extended by enabling learners to reflect upon this, to ask ‘how did this come about?’ to see the wonder of the cosmos as humans try to understand and seek meaning (8.3.7) (Colucci-Gray et. al. 2006:229). Implied within the notion of ‘understanding the interconnections and interdependences between natural processes and human ways of living’ is a concern for ‘the “wellbeing” of the ecosystems and the earth’ (Colucci-Gray et. al. 2006:237), and this concern, for the learner, implies coexistence and non-violence towards ecosystems and the Earth (8.3.1).

8.3.6 Globalism to Place, disconnect, disembodiment [global]

In 7.5.4.1 Globalism was identified as a core Ecological Social Imaginary value. Place was discussed within the local context in 8.3.3.2. The aspect of place discussed there was of the immediate place that living and non-living things inhabit. It is within that place that usually food, shelter and other aspects of immediate existence are found. For humans it is where natural resources are located and manipulated, and it is also where immediate identity is located. In the Pre-modern Social Imaginary, and the early and middle parts of the Modern
Social Imaginary this was the key place for humankind, whether it be the local community, or the Nation. Towards the latter parts of the Modern Social Imaginary, for humankind this notion of place has also taken on a global nature. All living and non-living things live within a global system, as the air and water moves around the globe, but it is at the cultural level that humankind is beginning to develop a global awareness, understanding and impact.

For Connective Education this means equipping learners with a global understanding and awareness of the way in which the natural and cultural operate. As technological life has become much more disembodied, this will enable learners to reconnect with living and non-living things, and distant others, by understanding that they are all linked together in an interrelated and connected world (Orr 1992:144) (8.3.5). It is the development of the realisation that although learners live in a specific place, that place is located within the planet, and it is from the interaction of all living and non-living things that the specific place can be understood at both a local and a global level. There is a danger with only looking at place as local that insularity and parochialism may develop. The identification of life existing upon a planet, and the planet existing within a universe enables the learner to be aware of a wider view of what life is. This enables two things. Firstly that humankind needs ‘a sense of [their] place in the world, including how [they] affect and are affected by issues on a global scale, such as persistent pollutants, energy and climate change‘ (Nichols 2011:11). Secondly that humans ‘often feel a spiritual connection to something elemental about nature, to a larger cosmology and the scale and longevity of nature, which can be humbling‘ (Petty 2009:29). It is both through how humankind affects the Earth, and how the Earth affects humankind that a sense of connection can be made by the learner, which may be spiritual (8.3.7) or aesthetic (8.3.3.4). This may be shown in attachment to the Earth, biophilia or environmental sensitivity that leads to an emotional connection (Nichols 2011), but the key thing is that it enables the learner to experience transcendence (8.3.7), that there is something bigger than themselves, and to explore how they connect with that, so that humans are living things that come ‘to be of the world and who also assume responsibility for the world‘ (Bennett et. al. 2012).
8.3.7 Transcendence to Wisdom, understanding, meaning

Transcendence was identified as being a core Ecological Social Imaginary value in the Spatial Domain (7.5.4.1), where understanding of evolutionary theory enables individuals to locate themselves in a natural process, and in the Temporal Domain (7.5.4.2), where time is seen as being greater than the immediate lifetime of the individual. Whereas Ecological criticality (8.3.4) developed knowledge and can be seen as a cognitive function, Transcendence develops wisdom, understanding and meaning, looking at the connections between humankind and the natural world.

According to Hart (2014:166) ‘one does not have wisdom; one acts wisely (italics in original). Through volition, a preparedness to act by the learner (Birren and Fisher 1990), wisdom becomes a virtue in that through empathy, intelligence and reflectivity a complex perspective can be attained that leads to a course of action (Csikszentmihalyi and Rathunde, 1990). This course of action, for Jarvis (2012:1), means ‘devoting time in seeking to understand … human life and in living it for the common good’.

Wisdom is also a quest for truth (Hart 2014). The purpose of the quest is to seek, realising that there may be no ultimate truth, but that humankind needs to keep on trying, so that they ‘can both understand and contribute more meaningfully to the world in which [they] live’ (Jarvis 2012:4). It is through this cognitive process that in order to make decisions information needs to be obtained and processed. A wise person will be able to put wholeness to the information, to place it in a wide scheme, rising above the petty (Csikszentmihalyi and Rathunde 1990). They will, in Bailey’s (1984) words, go ‘beyond the present and the particular’. A quest for truth also suggests that truth may well change as new ways of seeing the world are developed, linking back to ecological criticality (8.3.4). Jarvis (2012:4) argues, echoing Popper, that even though humankind may never find ultimate truth they ‘must keep on trying, understanding that the answers which [they] hold are neither ultimate nor timeless’. Wisdom enables humankind to bear this paradox.
Wisdom also links to a wider perspective upon humankind's place, for according to Jarvis (2012:4), wisdom is about ‘seeking to understand, seeking a meaning, to the cosmos’ …’and all that is within it, including our own lives’, thus becoming also a personal good because by ‘overcoming selfish ends’, the reflective nature of wisdom brings intrinsic rewards that lead to a higher state of consciousness (Csikszentmihalyi and Rathunde 1990), thus enabling transcendence.

In Connective Education, wisdom is shown by the learner’s actions, actions that show a search for meaning, and an understanding of how all-living things interact to produce life on Earth, and what is needed to sustain this life. It is about thinking about the ‘bigger picture’, and thinking holistically about how all life lives together. It is about realising that whilst there may be no ultimate truth, the quest for truth is what makes humans human, and that in attempting to be human there is connection with the planet. A wise person, according to Senge et. al. (2004), does not try to control, but to understand, and according to Birren and Fisher (1990:331) a ‘wise person weighs the knowns and unknowns, resists overwhelming emotion while maintaining interests, and carefully chooses when and where to take action’. It is through wisdom, that truth, beauty and goodness are linked.
Using the idea of nested systems, the core ESI values can be examined in order to construct a vision of education that would enable the forming, legitimating and perpetuation of the Ecological Social Imaginary. The vision developed using the core ESI value of holism/systems was Connective Education, with the educational metaphor of the web, a natural structure that connects everything together. From the core ESI values the core educational ideas were also developed (see figure 8.3). The image is the final part of Bánáthy’s (1991) systems design to be developed in this chapter. The web was used as the educational metaphor for the natural part of Connective Education. In order to develop an image, there is a need to construct a complementary educational metaphor for the human part of Connective Education, to give coherence to the core educational ideas.
8.4 Image – Educational metaphor for the human world

In section 8.2 Connective Education was identified as having two components: the first was the idea of the inter-relatedness of all living and non-living things, ‘a community of life’ (Orr 1992:138): the natural world. The second was the development of human attributes and abilities to live a life of value, ‘personal wholeness’ (Orr 1992:138): the human world. In order to develop the vision of Connective Education, the metaphor of the web was introduced, and this identifies with the natural world. To complement this there is the need for a corresponding metaphor for the human world. Again, the core ESI value of holism is useful, as personal wholeness implies a holistic approach to the development of persons.

In section 8.3 a series of core educational ideas were developed from the core ESI values. It is from the core educational ideas that the image of Connective Education can be drawn. Steiner and Nauser (1993:108) identify three holistic modes of experience: mind, body and emotion. The former, they claim, is held in higher esteem than the latter two. This reflects the Modern Social Imaginary, where the life of the mind is held to be superior to all other modes of experience (3.5.4). A holistic approach to developing persons in the Ecological Social Imaginary would look to develop all three modes.

Within the core educational ideas there appear to be different foci (see table 8.4). The ideas of wellbeing, stewardship and practical wisdom suggest facets encompassed within the individual, of feelings, of an emotional response to the world. Local place, manipulating and appreciating the outdoors suggest an active response to the world, of the body. Ecological literacy, complexity and ignorance suggest a cognitive response, the mind. Steiner and Nauser (1993) then use the images of head, hands and heart to convey the three modes of experience, of mind, body and emotion respectively.
The Web - Holism, system
Core ESI values and core educational ideas

This is further developed by Orr (2004:2), who states that education is about ‘making connections between head, hand, heart, and cultivation of the capacity to discern systems — what Gregory Bateson once called "the pattern that connects." Both Orr (1992, 2004) and Kumar (2014) talk of head, heart and hands, but McBride et al. (2013) and Manitoba Education (2011) add spirit to this, and it is to spirit that the core educational ideas of interconnectedness/interdependency, global place, and wisdom/understanding/meaning contribute to in the making of connections.

Kumar (2014) conflates spirit and heart, but it would appear to do so misses an important aspect of spirituality. Manitoba Education (2011:5) identifies the core competencies of ecoliteracy as those that 'relate to the head (learning to know), the heart (learning to be), the hands (learning to do) and the spirit (learning to live together)'. In this way the heart relates to the person, whereas spirit takes on a wider set of relationships to do with others and the environment. In order thus to create a holistic perspective on persons in the Ecological Social Imaginary, and to create an image that identifies the personal wholeness part of Connective Education, the human world, the metaphor of heart, hands, head and spirit would seem to be appropriate.

It is in the making of connections between the four aspects that Connective Education is developed. It is through the metaphor of the web linking head, heart, hands and spirit that meaning is given to education in the Ecological
Social Imaginary. Through this it is intended to produce a particular type of person who is
‘prepared to be an effective member of [a] sustainable society, with well-rounded abilities of head, heart, hands, and spirit, comprising an organic understanding of the world and participatory action within and with the environment’ (McBride et. al. 2013:14).

In this way the educational metaphor of a web connecting head, hands, heart and spirit, reflects and embeds the values of holism and systems developed within the Ecological Social Imaginary (see figure 8.4).

![Figure 8.4 Connective Education vision and image metaphor – Heart, hands, head and spirit linked by the web](image)

Having established the image metaphor of the heart, hands, head and spirit representing the human part of Connective Education, there is a need to draw the core ESI values and core educational ideas into the holistic image of the learner.
8.4.1 The Heart

It is through the image metaphor of ‘the heart’ that the learner begins to understand their emotions (Centre for Ecoliteracy 2014) and this contributes to the individuals understanding of, and working towards, goodness (Kumar 2013), what Aristotle identifies as the practical (Saugstad, 2005). This means ‘learning to be’, so that individuals have empathy and respect for others and the environment, can see things from multiple and diverse views, and have a strong commitment to justice (Centre for Ecoliteracy 2014). For Kumar (2013:118) the qualities of the heart are learning ‘to be respectful, grateful, compassionate, generous and caring’ and ‘learning to deal with … emotions, feelings, anxieties and uncertainties’. This is done through developing: wellbeing, which links to the core ESI value of sufficiency; stewardship, which links to the core ESI values of future-orientation and an intergenerational perspective; and practical wisdom, which links to the core ESI value of ecocentrism.

<table>
<thead>
<tr>
<th>The Heart</th>
<th>Core ESI value</th>
<th>Core Ed ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOODNESS</td>
<td>8.3.1 Sufficiency</td>
<td>Well-being</td>
</tr>
<tr>
<td>Practical Learning to be emotions</td>
<td>8.3.2 Future-orientation, intergenerational</td>
<td>Stewardship</td>
</tr>
<tr>
<td></td>
<td>8.3.3 Ecocentrism</td>
<td>8.3.3.1 Practical wisdom</td>
</tr>
</tbody>
</table>

Table 8.4.1 Image metaphor - The Heart
8.4.2 The Hands

It is through the image metaphor of ‘the hands’ that the learner begins to understand the need to be active (Centre for Ecoliteracy 2014) and that this contributes to, and develops their ability to, appreciate beauty (Kumar 2013), what Aristotle identifies as the productive (Saugstad, 2005). This means ‘learning to do’, creating sustainable things, using resources justly and turning convictions into action by applying ‘ecological knowledge to the practice of ecological design’ (Centre for Ecoliteracy 2014). Orr (2004:2) emphasises this point, that it is important that learners engage in ‘the active cultivation of ecological intelligence, imagination, and competence’ through the making and transforming of things in a sustainable way. They do this by interacting with and appreciating the outdoors, and developing a sense of local place, which links to the core ESI value of Ecocentrism.

<table>
<thead>
<tr>
<th>The Hands</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BEAUTY</td>
<td></td>
</tr>
<tr>
<td>Productive</td>
<td></td>
</tr>
<tr>
<td>Learning to do</td>
<td></td>
</tr>
<tr>
<td>active</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Core ESI value</th>
<th>Core Ed ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecocentrism</td>
<td>8.3.3.2 Place (local)</td>
</tr>
<tr>
<td>Ecocentrism</td>
<td>8.3.3.3 Outdoor (manipulating)</td>
</tr>
<tr>
<td>Ecocentrism</td>
<td>8.3.3.4 Outdoors (appreciating)</td>
</tr>
</tbody>
</table>

Table 8.4.2 Image metaphor - The Hands
8.4.3 The Head

It is through the image metaphor of ‘the head’ that the learner’s cognitive ability is developed (Centre for Ecoliteracy 2014) in the seeking of truth (Kumar 2013), what Aristotle identifies as the theoretical (Saugstad, 2005). This means ‘learning to know’ about systems, ecological principles, problem-solving, assessing impact of human activity and looking at long-term consequences (Manitoba Education 2011, Centre for Ecoliteracy 2014). Orr (2004:3) suggests that an ‘ecologically literate person would have at least a basic comprehension of ecology, human ecology, and the concepts of sustainability, as well as the wherewithal to solve problems’. This is done by developing an understanding of ecology and human engagement with nature, that an understanding of ecology means engaging with complexity, and that it may not be possible to know everything, which links to the core ESI value of Ecological criticality.

<table>
<thead>
<tr>
<th>The Head</th>
<th>Head Learning to know (cognitive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRUTH</td>
<td></td>
</tr>
<tr>
<td>Theoretical</td>
<td></td>
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<tr>
<td>Learning to know</td>
<td></td>
</tr>
<tr>
<td>cognitive</td>
<td></td>
</tr>
<tr>
<td>Core ESI value</td>
<td>Core Ed ideas</td>
</tr>
<tr>
<td>8.3.4 Ecological criticality</td>
<td>8.3.4.1 Ecological literacy</td>
</tr>
<tr>
<td>Ecological criticality</td>
<td>8.3.4.2 Complexity</td>
</tr>
<tr>
<td>Ecological criticality</td>
<td>8.3.4.3 Ignorance</td>
</tr>
</tbody>
</table>

Table 8.4.3 Image metaphor - The Head
8.4.4 The Spirit

It is through the image metaphor of ‘the spirit’ that the learner makes connections (Centre for Ecoliteracy 2014) with fellow humans and living and non-living things, and this contributes to engaging in good acts (Kumar 2013), what Aristotle identifies as the practical (Saugstad, 2005). This means ‘learning to live together’ by revering the ‘Earth and all living things’, experiencing awe and wonder, developing bonds and appreciation of place and nurturing kinship (Centre for Ecoliteracy 2014). An important part of the spirit, according to McCuddy and Pirie (2007:960) is the development of selflessness rather than selfishness. This is done by developing: a sense of the global as a place, which links to the core ESI value of globalism; developing wisdom, understanding and meaning, which links to the core ESI value of transcendence; and understanding the interconnectedness and interdependence of living and non-living things, which links to the core ESI values of globalism and ecological criticality.

### The Spirit

<table>
<thead>
<tr>
<th>GOODNESS</th>
<th>Core ESI value</th>
<th>Core Ed ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical</td>
<td>8.3.5 Ecological criticality</td>
<td>Interconnectedness/ interdependence</td>
</tr>
<tr>
<td></td>
<td>8.3.6 Globalism</td>
<td>Place (global)</td>
</tr>
<tr>
<td></td>
<td>8.3.7 Transcendence</td>
<td>Wisdom/ understanding/ meaning</td>
</tr>
</tbody>
</table>

Table 8.4.4 Image metaphor - The Spirit
8.4 Conclusion

Connective Education then is about developing an education that enables humankind to live within the planet upon which they depend. It is about developing the image metaphors of head, hand, heart and spirit linked by a web, and through these developing a series of core educational ideas (see figure 8.5) that enable learners to actively engage with the planet and living things that they depend upon. The Head is about the search for truth, about developing cognitive attributes through learning to know. The Hand is about making and appreciating beauty, about being active by learning to do. The Heart is about being and doing good, by understanding one’s emotions, about discovering who you are by learning to be. The Spirit is also about doing good, by exploring connections between all life and life processes, about creating a world in which all learn to live together. It is the web, especially the web of life, which links the four together, so that humans can develop their attributes and abilities by living in harmony with other life forms and life-processes, so that the human world and the natural world connect. In order to holistically link the four elements, learners engage with values that develop the knowledge, skills and attitudes that enable them to both become human beings and to care for the planet upon which they live. This is an active process, in which learners are engaged as thinking, caring, feeling beings, so that in order to ‘understand nature [humans] have to experience nature, [they] have to be in nature and [they] have to learn from nature, rather than learning about nature’ (Kumar 2013:112). In this way they truly connect with their planet.
Figure 8.5 Connective Education
Chapter 9: Conclusion and recommendations

This chapter starts with an overview of the thesis (9.1), and then revisits the sub-research questions (9.2). This is then followed by the main research question (9.3). In this section there will be a discussion of the theoretical (9.3.1), policy (9.3.2) and personal/professional (9.3.3) implications of this thesis. Where appropriate, the further research suggested by these implications will be discussed. Finally, there will be a final conclusion (9.4).

9.1 Overview of the thesis

This thesis set out to investigate whether the current education system was able to meet the challenges of the 21st Century. To do this meant analysing the current educational system, looking at purpose and form, and identifying why it is structured in the way it is. However, this requires a prior analysis as to how it came to be structured that way. This, it was suggested, meant using the concept of the social imaginary. In this way the social imaginary was identified (Chapter 2), then the dominant social imaginary was outlined (Chapter 3), and finally the form and purpose of education within the social imaginary could be analysed (Chapter 4).

In order to see if this education system was able to meet the challenges of the 21st Century then an analysis of those challenges was needed (Chapter 5), followed by an analysis of the challenges in the context of the dominant social imaginary (Chapter 6). If it could be shown through the analysis that the dominant social imaginary was unlikely to meet those challenges, then this implied the need for an emerging social imaginary that could meet those challenges.

If the challenges of the 21st Century could be shown to be those involving humankind’s relationship with the planet and these challenges could not be met by the dominant social imaginary, what would the emerging one look like? This then necessitates the framing of a new social imaginary (Chapter 7). If education is central to the forming, legitimating and perpetuation of the social
imaginary, what then what would education look like within this, and could it meet the challenges of the 21st Century? (Chapter 8)

This is an important area to study, as it is through education that a particular type of person is formed, one who is able to take their place in the human and natural world. If the type of education is forming, legitimating and reproducing a human world that is presenting a different set of challenges to the one that the system was set up to meet, then it implies that humankind need to look at the natural world differently, and change education appropriately.

9.2 The sub-research questions (SRQ)

Chapter 2 set out to answer the SRQ What is a social imaginary? A social imaginary frames how humankind know, interpret and live within reality, and defines what is normal, and how to live within that normality through humankind’s understanding of the spatial, temporal and ontological domains.

Chapter 3 set out to answer the SRQ What is the current social imaginary? The Modern Social Imaginary was shown to be the current dominant social imaginary, being contempocentric in the temporal domain, national in the spatial domain, and anthropocentric in the ontological domain. A set of core values gave meaning to life in the Modern Social Imaginary defining what was normal.

Chapter 4 set out to answer the SRQ What form and purpose does education have within the Modern Social Imaginary? Education was seen as the means whereby the Modern Social Imaginary was formed, legitimated and perpetuated. The political and economic purposes of education in the Modern Social Imaginary focused upon the nation. The philosophical purpose of education in the Modern Social Imaginary was to embed the ideas of the Enlightenment. A common form of education emerged, based around a schooling system of institutions usually funded, provided and regulated by the state with specific buildings whose sole purpose was to educate.
Chapter 5 set out to answer the SRQ *What are the challenges of the 21\textsuperscript{st} Century*? It had been argued that humankind faced differing challenges at different times. It was argued that the challenges of the 21\textsuperscript{st} Century seem to be about humankind’s relation to the Earth, and how they will meet possible changes to the Earth and life upon it.

Chapter 6 set out to answer the SRQ *Can the Modern Social Imaginary meet the challenges of the 21\textsuperscript{st} Century*? An analysis of the values implied within the outcomes of chapter 5 suggested that the values of the Modern Social Imaginary, based upon contempocentrism, nationalism and anthropocentrism, will not be able to meet the challenges outlined above, and a social imaginary that is global, future-orientated and ecocentric would be better able to meet the challenges of the 21\textsuperscript{st} Century.

Chapter 7 set out to answer the SRQ *What are the key features of a social imaginary that can meet the challenges of the 21\textsuperscript{st} Century*? The Ecological Social Imaginary was developed, which would, it was suggested, enable humankind to know, interpret and live in harmony with the planet that they live upon, thus being able to meet the challenges of the 21\textsuperscript{st} Century. This consisted of a set of values reflecting the three domains. In the Spatial domain globalism, ecocentrism and transcendence are identified. In the Temporal domain are future-orientation, transcendence and intergenerational concern. In the Ontological domain is ecocentrism, holism/systems, ecological criticality and sufficiency.

Chapter 8 set out to answer the SRQ *What might education look like in the Ecological Social Imaginary*? Building upon holism as a value, Connective Education was developed which had the purpose of being to develop persons who could re-connect with the planet, developing their personal wholeness in the context of a community of life to unite the human and natural worlds.
9.3 The main research question (MRQ)

This section sets out to answer the MRQ *What are the educational implications of developing a new social imaginary, brought about by the challenges to be faced in the 21st Century? To do this, the theoretical, policy and personal/professional implications will be considered.*

9.3.1 Theoretical implications

9.3.1.1 The social imaginary

The use of the social imaginary in this thesis has meant firstly explicitly changing and developing the concept of the social imaginary. There is also, secondly, an implicit element within the use of the social imaginary, and that is the relationship of the social imaginary to other forms of societal analysis.
i) Changing and developing the concept of the social imaginary –
Taylor (2002, 2007) outlined the social imaginary (3.1), and this initial conception, of being both how humankind perceives reality, and how humankind act within that reality, as being defined by the social imaginary, has been kept. It was when Taylor (2002) began to explicate the Modern Social Imaginary that its use in this thesis began to change (3.5), as he equated the Modern Social Imaginary with a particular form, so moving from the social imaginary level to the ideological level. Rather than a market economy, it was the application of science and technology to industrial production that distinguished the Modern Social Imaginary. The public sphere was kept, but the democratic self-rule was again ideological, and popular sovereignty was suggested as a better explanation.

The second development of the social imaginary in this thesis was to organise it around the temporal, spatial and ontological domains, as a way for humankind to know, interpret and live within the world. It was suggested (chapter 2) that the subjective world of the individual understands the physical world through the ‘products of the human mind’ (Popper 1978:144). The ‘products of the human mind’ are probably fallible (2.2) and thus liable to change. It was also through the domains that a set of core values could be formulated for each of the social imaginaries.

It was the notion of changing social imaginaries that led to the third development of them within this thesis. By adapting Williams’ (1973) model of cultural and ideological change to the social imaginary level, it was possible to conjecture how social imaginaries change over time, and thus able to identify the Pre-modern Social Imaginary, and to develop a possible emerging social imaginary.

The fourth element, and one that suggests further research, is the identification of tensions between the domains of a social imaginary (4.3.3 and 4.6). This could be used to make the concept of the social imaginary more
complex and dynamic, as the tensions may suggest a way in which change occurs, but also how the tensions work out in practice.

In this way, by widening the conception of the social imaginary, organising the social imaginary around domains and values, and by developing a model of change for social imaginaries that this thesis has contributed to the development of the social imaginary.

i) The relationship of the social imaginary to other forms of societal analysis –

An area not discussed within the thesis, and which can be seen as an area for further research, is the relationship of the social imaginary to other forms of societal analysis, such as Archer’s (1995) morphogenetic approach and Giddens’ (1984) structuration theory. Due to the wordage limits of the thesis, it was not possible to discuss the possible relationship of the social imaginary to other theories. Further research would be interesting, to see how an essentially philosophical approach to societal organisation would sit with more sociological perspectives. Initial thoughts suggest that there may be a way of using Taylor and Archer together.

9.3.1.2 The relationship of education to change

It has been argued that the purpose of education was to form, legitimate and perpetuate the social imaginary (2.3.2 and 4.3.3). As humankind starts to realise that their current interpretation of the world is not as useful as it was, then social practices begin to change, and from this education changes. What this suggests is that societal change drives educational change, firstly by forming the social imaginary, then legitimating the practices within it, and then perpetuating those practices as the ‘normal’. This then raises the question of whether education can change society, or whether the values of society need to change first. For the emergence of a new social imaginary, as set out in this thesis, this is a central question, as Connective Education needs to be preceded by a move towards an Ecological Social Imaginary and it can be seen
as a limitation that this has not been developed, but also as an area for further study.

There is also the issue as to whether education can bring about personal change, and this was implied in 4.3.3 Schooling and liberation. An interesting paradox arises, for if the purpose of education is to perpetuate the practices and values of the dominant social imaginary, but by educating, especially in the Modern Social Imaginary variant, the individual is given the tools to think for themselves, they are then able to reject those practices.

9.3.1.3 Ecological virtues

In the development of the human part of Connective Education (8.4), of personal wholeness, there is mention of truth, goodness and beauty, and of Aristotle’s practical, theoretical and productive forms of knowledge. This is not developed within the thesis beyond its use in section 8.4, but again it opens up the further investigation of what ecological virtues may look like. The thesis has developed ecological values, and this raises an interesting point as to the whether ecological virtues and ecological values are the same (or linked? Or derived one from the other?). Initial thoughts suggest that values are standards that humans try to live by, and by being internalised they become virtues. This implies that by living out the values of the Ecological Social Imaginary, ecologically virtuous persons will be produced. As Lombardo (2008:5) states, ‘a virtue is a good value lived’.

9.3.1.4 The importance of metaphor

The identification of the image metaphor of heart, hands, head and spirit and the vision metaphor of the web has highlighted the importance of the use of metaphor, not just in the context of this thesis, but also in how humans communicate (Lakoff and Johnson 2003). Steger (2009b), Bowers (1997), Princen (2010) and Healy (2013) amongst others highlight the use of metaphor, and the identification and use of root (for the social imaginary) and educational metaphors became an important part of the thesis.
9.3.2 Policy implications

9.3.2.1 The Ecological Social Imaginary
This thesis has developed the idea of the Ecological Social Imaginary into a coherent form, identifying the key values within it. There are few references to an ecological social imaginary in the literature, although Clark (1998) uses the term ecological imaginary, but the features are not mapped out. It is the extensive working out of what an Ecological Social Imaginary may look like that adds to the knowledge of social imaginaries.

9.3.2.2 Connective Education
Sterling (2001:49) outlines a view of education, what he calls an Ecological Paradigm for Education, which identifies similar aspects of education to that found in Connective Education, but with a very different set of values, and without the development of the Ecological Social Imaginary. The view of Connective Education developed in this thesis is more extensive in values terms. In this respect this thesis engages in further discussion about what education may look like from an ecological perspective.

9.3.2.3 Need for societal change on a global scale
With the identification of globalism as a key value within the Ecological Social Imaginary (7.5.4) it is apparent that change to do with the challenges of the 21st Century, as identified in Chapter 5, would be difficult to meet on a national scale. This implies that there needs to be a global reaction to the meeting of those challenges. As the stances identified in section 6.3 show, there are a number of differing stances that can be taken as far as the challenges are concerned. What this shows is that the move from a dominant to an emerging social imaginary will not be easy or clean, with resistance and incorporation of ideas being constantly engaged with. The word limit of this thesis have meant that this has not been engaged with, partly because the thesis deals with the what and the why, not the how.
9.3.2.4 Capitalism/ democracy links

Another implication of this thesis is the linkage of the Ecological Social Imaginary to capitalism and democracy. The link of the challenges with capitalism is a more contentious area for further research. There is a danger to equate global change with capitalism alone. Whilst capitalism is the dominant mode of production, it has not been the only mode of production. For the purposes of this thesis, the focus has been upon industrial methods based upon fossil fuels, rather than a specific mode. Would the command economy of the former Soviet Union have been any friendlier to the environment? The ability of capitalism to adapt and change means that it may be able to continue, but it is an area for further research within the wider context of this thesis.

In a similar way, the linkage to democracy is an issue that would benefit from further research. Representative democracy is closely allied to the Modern Social Imaginary, and can be seen as a part of contempocentric thought (3.5.3), with its focus upon the short-term. Whether deliberative or direct democracy would be more in tune with the Ecological Social Imaginary is a question that needs developing. A linked issue, and one expanded upon within 9.3.2.4, is the deliberate limitation of discussion about education in the Ecological Social Imaginary stopping at Bánáthy ‘s (1991) image level. The design of education within the Ecological Social Imaginary is one that needs the engagement of everyone involved with education, and thus becomes a democratic discussion.

9.3.2.5 The emerging social imaginary

In sections 3.2 and 6.3 there was discussion of the form of the emerging social imaginaries. Whilst this thesis has followed the line through ecological challenges to the Ecological Social Imaginary as the emerging social imaginary, this does not mean that this will be the emerging social imaginary. The stances in section 6.3 identify differing positions on the challenges identified in Chapter 5, and it may be that one of these will develop, as the thesis is based upon differing values in relation to the natural world, and this means that contestability will occur. It is an obvious limitation that the likely or probable form of the emerging social imaginary has not been developed, but again, this opens up further research.
**9.3.2.6 The form of Connective Education**

The desire to engage in debate about how best to teach learners, and where that best place may be suggests another area to research and whether schools as we currently know them are appropriate for education within the Ecological Social Imaginary. Would a variety of settings be best? What would be the relationship between ‘teacher’ and learner? Would educator be a better term? How should learners learn to make connections? What role would technology play in this, in that technology can begin to free learners in time and space? Also within this is how to develop current ‘teachers’ and to train ‘teachers’ to come? In 8.3.4.2 learner defined learning was mentioned: what does this mean, what does it look like? There is a lot of research to do here.

**9.3.2.7 Ecological Educational Leadership**

In section 1.2 Bottery’s (2006) notion of developing an ecological role for educators was mentioned. This suggests that there could be such a things as ‘ecological educational leadership’. Again, the wordage limits of this thesis meant that this idea could not be pursued, but this is another area of potential research. Initial thoughts are that there needs to be knowledge of ecological thought and systems, that these need to be formulated in a form that learners can engage with, that learners live within nested systems, and that sufficiency needs to guide both learning, and the location of learning. Whether this will be the attribute of a single person also needs examining, and it may be that leadership, rather than leaders, is what is developed.

**9.3.3 Personal/ professional implications**

**9.3.3.1 Engaging in practical wisdom**

From a personal perspective this thesis has made me engage with nascent ideas, and has now pushed me into thinking about how I can personally live these ideas, rather than just write about them. It is challenging my accepted notions of what is normal, and making me think about what personal changes I must make to my life.
9.3.3.2 Responsibility to current learners

The responsibility I have to the learners that I teach is another area that I will have to reconsider. How much of this thesis do I present to them to consider? How do I debate change from within the current social imaginary?

9.4 Final conclusion

Through the development of the concept of the social imaginary, and highlighting how social imaginaries change through time, it has been possible to look at current challenges faced by humankind, and examine whether the Modern Social Imaginary can meet those challenges. Having concluded that it would be difficult for humankind to do so in that social imaginary, it was proposed that an Ecological Social Imaginary would be best placed to meet the challenges of the 21st Century, and an education based upon the values of the Ecological Social Imaginary would enable this to happen. The implications, outlined above, are extensive, in that a completely new way of perceiving education and its purposes would be required.
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Image references


Image 3 MATTER Atom Microsoft Clipart

Image 4 SOCIAL IMAGINARY (online - http://us.cdn2.123rf.com/168nwm/carpathianprince/carpathianprince1204/carpa

Images 6 Culture – Human understanding of the world

Image 6a (online - http://upload.wikimedia.org/wikipedia/commons/a/a7/Eug%C3%A8ne_Delacroix_%E2%80%93_La_libert%C3%A9_guidant_le_peuple.jpg – accessed 15/12/2014)


