Education for Life

The Head, Heart and Hands of Sustainable Learning



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Education |edjo'kei())n|

From the Latin word 'educare'. To bring out or develop what is latent or potential, to unfold what is dormant; to make explicit what is implicit.

Education might well be defined as knowing the story of the universe, of the planet Earth, of life systems, and of consciousness, all as a single story, and recognizing the human role in the story. The primary purpose of education should be to enable individual humans to fulfil their proper role in this larger pattern of meaning.

- Thomas Berry¹

Life |IAIF|

1 The condition that distinguishes animals and plants from inorganic matter. Living systems are open self-organizing, autopoietic living beings that interact with their environment. They are maintained by flows of information, energy and matter. Life is a property of an **ecological community** rather than a single organism or species.

2 the period between the birth and death of a living being: she lived an engaged and meaningful life | they became friends for life.

3 (in art) the depiction of a subject from a real model, rather than from an artist's imagination: *the expression, pose and gesture were sketched from life*.

4 vitality, vigour, presence or energy. Make or become active, lively, or interesting. Bring someone or something to life: Awake with a sense of hope, energy and enthusiasm, the community came alive again.

There is no wealth but life

– John Ruskin

I am life, which wills to live, and I exist in the midst of life, which wills to live.

– Albert Schweitzer

I call heaven and earth to record this day to your account, that I have set before you life and death, blessing and cursing: therefore choose life, that both you and your seed shall live.

- Deut. 30.19

Abstract

This thesis reviews the litterature on sustainability education. Many writers identify the need for changes in educational systems towards a much more ecological, systemic and relational paradigm. The dissertation explores the meaning of such an educational paradigm that 'takes us into the depths of things', by asking the question: What is the meaning of an 'Education for Life', who can I learn from, and how can I become a more inspiring and effective sustainability educator? A synthesis model is developed that identifies the importance of three distinct dimensions: the inner, relational and systemic. The dissertation then explores the practical implication of a holistic kind of education that could support each of these dimensions.

Acknowledgements and Gratitude

No man is an island, Entire of itself. Every man is a piece of the continent, A part of the main.

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1. Introduction¹

Words have the power to both destroy and heal. When words are both true and kind, they can change our world. - The Buddha

1.1 Aim of the dissertation

Given the condition of our times, a primary purpose of human inquiry is not so much to search for truth but to heal, and above all to heal the alienation, the split that characterizes modern experience. – Peter Reason and Hillary Bradbury²

The aim of writing this dissertation is to take steps towards becoming an excellent sustainability educator. In the coming years I intend to engage myself in projects seeking to bring about a sustainable transformation of education and society. I have chosen to use the writing of this dissertation as an opportunity to explore in depth the meaning of an *Education for life*, in terms of ethics, theory and practice. In the immediate term, I am involved in co-designing and teaching an educational program in 'ecological entrepreneurship' at Vestjyllands Højskole in western Denmark, where I will bring into play the knowledge created through this project directly. In the long term, I hope this in-depth inquiry will provide me with a solid theoretical and practical basis to engage in sustainability education and support its development. It is a personal and open-ended exploration of the art, theory, and practice of sustainability education, drawing on a many different fields and ideas. The main focus throughout has been exploring the synergies and possible relationships between theories of learning and change, whole systems thinking, ecological literacy and contemplative meditative practices such as mindfulness and meditation. I have envisioned this work as a conversation between friends, and fellow practitioners, and thus I have attempted to write it in an engaging and personal style. You are hereby invited to join this conversation.

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¹ Thomas Berry quote on previous page is from (Swimme & Berry 1992, p.256)

² (2001: 10)

1.2 Context - The problem of education

The volume of education has increased and continues to increase, yet so do pollution, exhaustion of resources, and the dangers of ecological catastrophe. If still more education is to save us, it would have to be education of a different kind: an education that takes us into the depth of things.³ – E.F. Schumacher

When Schumacher wrote these words towards the end of the last century, he pointed out a fundamental tension that has only increased since. Our educational systems are supposed to prepare the next generation for the future, and yet we are educating young people to fit within a culture that is heading towards collapse.

This thesis is based on the premise that the present trajectory of global economic development is dangerously unsustainable. The symptoms of ecological crisis are everywhere. The climate is changing (IPCC 2014) and the challenge is no longer only understanding what is causing it, or even how to mitigate it. We also need to develop resilience in our social and ecological systems to maintain good and meaningful lives in the turbulent times ahead. As if climate change was not enough, the world is rapidly burning up its last reserves of cheap fossil energy. These 'Hydrocarbon Twins' (Hopkins 2008) intertwine to present an unprecedented challenge to our modern industrial way of life. As human economic activity increases, the web of life rapidly unravels, with plants and animals going extinct at ever increasing rates (MEA: 2005). Our economic activity has now far exceeded the earth's carrying capacity (Wackernagel 2002), imposing limits to growth (Meadows et al.: 2004), while billions of people are still living in unbearable and unjust conditions. (Raworth: 2013)

It is not the supplies of oil or copper that are beginning to limit our development but life itself. Today, our continuing progress is restricted not by the number of fishing boats, but by the decreasing number of fish; not by the power of pumps but by the depletion of aquifers; not by the number of chainsaws but by the disappearance of primary forests.

- Hawken & Lovins⁴

Thinking about this situation and our future prospects can be very disheartening, even deadening. However, we can also choose to see this crisis as an opportunity to become our most brilliant selves, to envision and create the more beautiful world our hearts know is possible. The underlying idea behind this thesis is that the difference between a world that is sustainable and thriving, rather than in social and ecological collapse is learning. What is required is no less than a personal, cultural and economic revolution on a global scale. Every aspect of our lives is going to change dramatically

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³ (Schumacher, 1997 - first published in 1974).

^{4 (1999: 3)}

during this century, whether we like it or not. The question in brief, is whether we take a reactive response and learn through crisis - with the suffering and injustice that will entail – or rather choose an actively engaged and prospective sustainable transition by design. If we are to succeed in the latter, it will require a fundamental change throughout our educational systems.

Unfortunately, most present day mainstream education is not helping people learn to live sustainable lives, but is primarily preoccupied with the transmission of information and technical skills, perpetuating unsustainable thought and action (Sterling 2001). In his essay 'what is education for?' David Orr (1994) points out that the ecological crisis we are facing is not the work of ignorant or uneducated people, but rather the results of work by people with prestigious academic degrees, stating:

Education is no guarantee of decency, prudence or wisdom. More of the same kind of education will simply compound our problems. It is not education, but education of a certain kind, that will save us. (Ibid: 8)

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As I write this, we have just left the United Nations Decade of Education for Sustainable Development (from 2005-2014). Last year the UN published their 17 Sustainable development goals (UN 2015). The goals have a broad scope – ranging from poverty alleviation, gender equality, education and climate change – and the UN's ambition is to reach a majority of them before 2030. The 4th goal deals specifically with education; with an aim to "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UN 2015) point 4.7 reads as follows:

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development (UN 2015)

The umbrella term for the approach taken by the UN is Education for Sustainable Development (ESD). I have chosen to use the term 'Education for Life' for my title. Professor of sustainability education at Plymouth University Stephen Sterling (2001) describes how trying to fit 'ESD' or 'environmental education' into the framework of a mechanistic and transmissive education

paradigm is not adequate to meet the challenges of the 21st century. Instead he proposes the term 'Sustainable Education' (2001) to suggest a shift of educational culture as a whole:

The term 'sustainable education' implies whole paradigm change, one which asserts both humanistic and ecological values... while 'education for sustainable development' has in recent years won a small niche, the overall educational paradigm otherwise remains unchanged. Within this paradigm, most mainstream education sustains unsustainability (2001:14).

This is an observation and concern, which I share, and the reason I have chosen the title 'Education for Life'⁵. In brief, what I want to explore in this dissertation, is an emerging educational paradigm that acknowledges the dangers of the present ecological crisis, as well as it's deep roots in our cultural and economic development, cultivates commitment to change, and supports a transition to a life-sustaining society. Throughout the past decades there have been several attempts, movements, at creating such a different and deeper kind of education, both conceptually and practically⁶, and there have been many experiments with sustainable educational approaches. It is these 'seeds of an education for life' that I have wanted to study and learn from.

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⁵ With reference to the Danish theologian, poet and educational reformist N.F.S Grundtvig who used the term a 'School for Life' to describe his vision of what became the Danish folk school movement.

⁶ See Sterling (2003: 309) for an in depth review of the different paradigms within educational approaches to sustainability

1.3 Intentions, inquiry and questions

"For apart from inquiry, apart from the praxis, individuals cannot be truly human. Knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue in the world, with the world, and with each other." - Paulo Freire

I began this dissertation with an intention. I wanted to improve my practice as an educator, by learning from others and through 'reflection in action'. My inquiry throughout this work can be summarised as:

"What is the meaning of an 'education for life', who can I learn from,

and how can I become a more inspiring and effective sustainability educator?"

This question contains within it a whole range of related assumptions and questions - like a mycorrhizal web, unseen by the mammalian eye except for its fruiting body. Lets have a look at some of them:

Taking a broad view, what kind of educational system do we have today and what is wrong with it? How can education help support, rather than inhibit a transition to a life-sustaining culture? How do we begin to move towards such an education that 'takes us into the depth of things', that explores the roots of the social and ecological crises?

A sustainable transition needs the collective intelligence and creativity of all its community members. The problems we face cannot be solved by clever individuals. How can education prepare students to work together towards the common good? What kind of education can empower people as active responsible citizens of a biotic community? What are the intellectual and practical traditions and experiments we can learn from in this journey?

What are the implications for pedagogy in a participatory, empowering and change-oriented paradigm? How can we envision the relationship between learner and educator in this situation? What are the relationships between 'outer and inner' transformation? How can mindfulness, meditation and similar contemplative practices support us in the transition to a life-sustaining society?

The ecological crisis is in essence a crisis in perception – what Gregory Bateson called and 'epistemological error'⁷. What are the elements of a more ecological, systemic and relational paradigm? How do we develop and support ecological literacy and appreciation for our interdependence with all life - our interbeing?⁸

⁷ In his classical work "Steps to an ecology of mind" Bateson uncovers how our worldview rests on a belief and perception of separateness, which in turn leads to fragmentation: "*I believe that the massive aggregation of threats to man and his ecological systems arises out of errors in our habits of thought at deep and partly unconscious levels*." (1972: P. 463) ⁸ Thich Nhat Hanh (1998)

1.4 The structure of the thesis

The present chapter serves as an introduction to the context and intentions of my inquiry. It is closed with a personal account (1.5) of the experiences and questions that has led up to my decision to study a Master degree in Economics for Transition at Schumacher College in Devon, UK. With this story I hope to invite you – the reader – into the conversation. It should be clear at this point that my intentions and interests in pursuing this research are far from strictly academic. I sincerely wish to contribute my time and energy to the transition to a sustainable society.

The second chapter is a presentation of my research methodology.

The third chapter is a literature review and synthesis of key ideas. Here I have reviewed the main theoretical and conceptual context for exploring the questions concerning sustainability education. Some readers may find this part somewhat abstract and unnecessarily detailed. My wish has been to provide a solid theoretical foundation for the practical pedagogical work I have pursued in the action research experiment.

The fourth chapter is a presentation of the key findings of my litterature review, conversations and action experiment.

The fifth chapter is a summary of my research inquiry and conclusion.

1.5 My story

If you do not write of things deep inside your heart What is the use of churning out so many words – Ryokan⁹

This dissertation has grown from my personal journey of gradually becoming aware that we are living in the midst of an unprecedented ecological crisis, and attempting to embody an appropriate response, in my way of life as a whole. With this brief story, I hope to give you a sense of the larger context of my interest in sustainability, education and learning. I will relate some of the critical lived experiences, situations, influences, and lessons that have led me to my current understanding. I hope you will enjoy it.

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Born in 1989 – the year the Berlin Wall came down and the hypertext-transfer-protocol that became the world wide web was written – I grew up in a world in transition, where it seemed that 'something was on the way out and something else was painfully being born. As if something were crumbling, decaying and exhausting itself, while something else, still indistinct, were arising from the rubble.¹⁰

Being a sensitive child, I would often feel overwhelmed by sadness when listening to the radio accounts of people suffering from war, or seeing children starve on television. I grew up with a deep feeling of suspicion that something was amiss, that all this suffering was betraying the peaceful world we ought to live in.

To protect me, my parents sheltered me. For a while things were good and life was simple. In my day care, they called me 'Happy Jacob'. But of course, as I grew older, the protective shell had to break, and all the suffering of the modern world became apparent yet again. From books and television I learned about global inequality, poverty, hunger and disease. I learned of wars, weapons

⁹ Zen Buddhist monk, poet and calligrapher (1758-1831) that lived most of his life as a hermit.

¹⁰ Paraphrasing here Vaclav Havel, poet and former president of Czechoslovakia, and one of my hero's in systemic thinking, writing and being. He was elected president in my year of birth – 1989.

and refugees. I learned of domination, exploitation, repression and violence. It was becoming increasingly difficult to stay sensitive and happy at the same time.

I grew up in a family with liberal values, and I inherited from my parents a sense of social justice and environmental concern. A deep sense of care for everything living arose early in childhood. However, the wisest people I knew - my parents and teachers - could not explain to me why society seemed to be so fragmented and the natural world so ruined by human activity. I began to wonder.

I seem to have an innate affinity for appreciating the interconnected nature of the world, sensing patterns and connections everywhere. I recall conversations with my family about the ethics of meat consumption, often ending in a great deal of discomfort on their part, and a sense of confusion on mine. Like many children, I loved learning, but disliked school. I would often skip classes to go reading in the library or explore the Birchwood's on the edge of the school grounds. I enjoyed being outdoors and loved it whenever we made field trips to the nearby forest.

In my early teens I came across Buddhism, from reading Dalai Lama and Zen stories and poetry. I was attracted to the compassionate ethos and what seemed to me like a more relational and holistic worldview. These stories suggested that there was a way to transform the suffering that had troubled me as a child and young adult, through understanding and compassion. I became vegetarian, abstained from drugs and alcohol and subscribed to environmental publications.

Throughout school I maintained a passion for drawing, which led me to spend several years drawing in museums, city streets and nearby woodlands. In the early phases, my learning was exclusively self-taught, through books and by imitating other artists I admired. Betty Edwards (2012) 'drawing on the right side of the brain' drew my attention to the way in which our perception is strongly affected by previous experience and deeply held preconceived mental models, as well as how it's possible to challenge and change these through the practice of attentive awareness.

I also think that it was during those hundreds of hours spent drawing statues, people and trees that I really began appreciating the subtle joys of 'coming to my senses' (Kabat-Zinn 2006). A very focused and calm quality of attention on a single object of perception, which I later came to know as mindfulness or meditation. I came across mind mapping, and other visual thinking tools; something I quickly came to appreciate and have practised passionately ever since. I now see this affinity for mapping, connecting, and exploring ideas through drawing as another expression of my innate affinity for 'holistic' and 'interconnected' thought.

It was during this same period that my broader social and environmental awareness took shape, and I began to sense answers to how the world had become so fragmented. I got involved in activist movements on a plethora of issues: peace and resistance to the wars in Iraq and Afghanistan, economic inequality, feminist and gender issues, animal rights and climate change. I was very influenced by the anarchist philosophical tradition, with its aims of 'economic, social, political and spiritual emancipation of the human race'¹¹. I was strongly influenced by Peter Kropotkin's (1972) ideas on 'mutual aid as a factor in evolution', describing how:

In the long run the practice of solidarity proves much more advantageous to the species than the development of individuals endowed with predatory inclinations. The cunningest and the shrewdest are eliminated in favour of those who understand the advantages of sociable life and mutual support. (Chapter 1)

However, my main source of political education was my correspondences with American linguist, anarchist and intellectual Noam Chomsky, who kindly and patiently answered my letters throughout adolescence. I recall one conversation in particular, where Chomsky described how the driving force of modern industrial society has been individual material gain, based on the idea that 'private vices yield public benefits'. He explained how a society following this principle would inevitably destroy itself. He talked about how our present economic system can only continue as long as it is possible to keep the illusion that the destruction created by human society is limited and that the world is an infinite resource, and infinite garbage can.

In my early twenties I travelled around the world, seeking out movements for social change. I was in Cairo during the Arab spring, and went to the United States to learn from the Occupy movement. While waiting to meet Chomsky in the MIT bookshop, I randomly picked up and bought the book *Thinking in Systems*' By Donella Meadows (2008). Her work was my first introduction to the idea of 'systems as a worldview' and 'systems thinking' as an important quality

¹¹ As Emma Goldman expressed it in her first interview after returning to the U.S from her exile in Europe/Russia

to develop. It instantly made sense and I became convinced that this was a kind of understanding that should be nurtured everywhere in our culture, from childhood, through school and university.

These travels and intellectual influences became a turning point for me. I began to see how the problems of social justice, economics and ecology that I witnessed around the world are connected in a network of mutual causality. Back home in Denmark, alive with a sense of meaning and direction, I decided to study environmental science, in order to deepen my appreciation for our interdependence with the natural world. I hoped to one day apply myself in service of creating a more sustainable economy and culture, in a healthy relationship with our environment.

At university I read reports on the exponential growth of pollution, soil erosion and desertification. I looked up the projected timeframes of depletion of precious minerals and peak oil. I read stories of poisoned rivers, overfishing and deforestation. I studied the major sources of greenhouse gas emissions and the dynamics of climate change. My anger and grief for the world grew stronger with every book and lecture, as I learned how the web of life is unravelling at our hands.

Rather than feeling empowered and inspired to address these problems, I felt overwhelmed, depressed and paralysed by their magnitude. It also occurred to me that while some of my fellow students shared my sense of despair, most did not seem to be emotionally affected at all by the 'impending ecological catastrophe'. In fact, most of the faculty and students at my university did not seem to be aware of the magnitude of the ecological crisis, and those who were spoke and acted as if addressing it was solely a question of minor technological adjustments, such as reducing the use of fossil fuels, designing more efficient engines or improving the rates of recycling. It seemed to me like most of what was being proposed, as solution was merely technical tinkering on the surface level, while not looking deeply at the roots of the ecological crisis. We rarely examined our own roles and responsibility, and only a few others seemed to share the pain I felt for the world and wish for a deeper cultural change.

Around the same time I rediscovered a battered copy of E.F. Schumacher's (1973) 'Small is Beautiful', that my father had given me years before. I soon got hold of his other books, and there was one passage in particular, that resonated strongly with my own experience of university:

The volume of education has increased and continues to increase, yet so do pollution, exhaustion of resources, and the dangers of ecological catastrophe. If still more education is

to save us, it would have to be education of a different kind: an education that takes us into the depth of things¹²

My response to this felt inadequacy of the educational paradigm I was enduring, rekindled my interest in learning and motivated me to explore for myself what such a different and deeper kind of education could mean. Thus, I began studying the theory and practice of education, with a particular focus on radical education, action research, critical pedagogy and transformative learning. From my early twenties onwards I studied the educational ideas of thinkers such as Freire, Shor, bell hooks, Chomsky, Zinn, Dewey, Piaget, Grundtvig, Bohm, Russell, Orr, Steiner, Montessori and Krishnamurti.

Especially the conversations between the philosopher Jiddu Krishnamurti and physicist David Bohm were important to me in these years. So much in fact, that I went backpacking to Chennai in India to visit the Krishnamurti Foundation and its related educational projects. Perhaps because of my own disappointment with conventional education and feelings of alienation from societal norms, I resonated strongly with the emphasis on finding our own path to understanding our relationships and ourselves:

"What we now call education is a matter of accumulating information and knowledge from books, which anyone can do who can read. Such education offers a subtle form of escape from ourselves and, like all escapes, it inevitably creates increasing misery. Conflict and confusion result from our own wrong relationship with people, things and ideas, and until we understand that relationship and alter it, mere learning, the gathering of facts and the acquiring of various skills, can only lead us to engulfing chaos and destruction."

- J. Krishnamurti in 'Education and the Significance of Life'

Reflecting on my feelings of grief for the world, and inadequacy of our stunted collective response, I realised that the problem of education was at the heart of it. I decided my grief was a healthy response to the ecological crisis, and that the purpose of education should be: to awaken us to the reality that our present way of life is destroying our home, to nurture a deep sense of responsibility, and then to enable each and every one of us to discover and develop our finest contribution to

¹² (Schumacher, 1997 – This I Believe and other essays).

reverting the damage and bringing about a life-sustaining society in healthy relationship with the earth. The belief systems that has brought about this global economic system is crumbling to the ground, in the same way that the Berlin Wall crumbled in my year of birth. The task for my generation is to create a new story of interdependence, solidarity and mutual aid.

I sought out different opportunities for teaching, and began to develop my own practice as an educator. I was employed to teach a course on sustainability in technological systems at Roskilde University, where I enjoyed a significant amount of freedom to experiment with pedagogical approaches. With a friend, I developed a two-hour workshop exploring the 'systems view of life'¹³ and taught it voluntarily around Denmark, including my own university, schools, conferences and events. I found it very challenging to successfully teach such diverse groups of people, with such different backgrounds and levels of prior understanding, about something as complex as systems theory. These experiences of experimentation with form and content were stretching and instructive. As part of my Bachelor's Thesis (Rask 2015) I developed a series of educational sustainability games¹⁴. I experienced how an embodied and playful pedagogy can contribute to a transformative education, which encourages understanding, participation and action.

I also began working for my local municipality, going to schools and educating children about waste and recycling. I spent a year looking through waste bins in Copenhagen, documenting and analysing what kinds of materials were being wasted, and working with the local citizens to improve their rates of recycling. Witnessing first hand the immense and systematic waste flows in our economic system, of food, metal, plastic, glass, wood and other precious materials, further inspired me to help raise awareness and action for a more sane and thrifty culture. It occurred to me that a society that creates such enormous amounts of waste would eventually collapse from resource depletion. It seemed to me that we face the decision of either learning to live in moderation, or perish.

It was because of my growing interest in sustainability education that I came across Schumacher College in Devon. My path had taken me back to a reference I had encountered many years before. I immediately knew I had to go and see this place for myself, so i decided to go and study their approach to transformative learning for sustainable living.

¹³ Primarily based on the work of Meadows (2008) and Capra (1997)

¹⁴ Inspired especially by Augosto Boals "theatre of the oppressed" and the "systems thinking playbook" by Sweeney and Meadows

Taking a break from scribbling this story, on the train back home from Devon to Denmark, I read a passage from Tove Jansson's (1946) 'Comet in Moominland', with which I want to end this story:

It was a funny little path, winding here and there, dashing off in different directions, and sometimes even tying a knot in itself from sheer joy. You don't get tired of a path like that, and I'm not sure that it doesn't get you home quicker in the end.

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2. Methodology

What is the meaning of an education for life, who can I learn from, and how can I become a more inspiring and effective sustainability educator?

2.1 What. Who. How

Tolstoy¹⁵ told a story of a king, who thought, that he would never fail if he knew the answer to three questions: What is the most important thing to do? Who are the right people to listen to, and whom to avoid? And what is the right time to begin everything? A closer look at my research question reveals three similar elements of inquiry: what, who and how. Throughout the past months I have worked with this inquiry in different ways that reflects the distinct nature of the three elements.

What. To explore the meaning of what I have called an 'education for life' I have carried out a comprehensive literature review (3) in relation to questions concerning purpose, form, content, curriculum and pedagogy. In chapter (4.1) I present the implications and synthesis of these many strands of thought in a coherent conceptual model.

Who. To deepen my understanding, I have engaged myself in sundry conversations. I have exchanged letters, skyped and met with several thinkers and practitioners with interests akin to the questions I am exploring¹⁶. Buddhists use the word *sangha* to describe their association or monastic community of practitioners. It is understood that it is very difficult to practice the noble eightfold path leading to the liberation from suffering (Nhat Hanh 1998) without the support of a sangha. Similarly I have wanted to surround myself with a community of practitioners from whom I can learn and gain support in the years to come. I have undertaken field trips with the purpose of learning from people and communities I consider as insightful and skilful in their practice of sustainability education. To study meditation and mindfulness, I travelled to the Buddhist monastery Plum Village (2016) in southwest France, founded by Vietnamese Zen master Thich Nhat Hanh in 1982. With its more than 200 resident monks and nuns it is the largest Buddhist monastery in Europe. The core practice of Plum Village is mindfulness in everyday activities. Here I experienced mindful eating, walking and working, as well as Dharma Talks on the philosophy and practice of Engaged Buddhism (Nhat Hanh 1998). In this way, I immersed myself in a first person inquiry of the theory and practice of mindful community living.

¹⁵ Originally published in 1885 in a collection of short stories called 'What Men Live By, and Other Tales'

¹⁶ See acknowledgements and gratitude

I have also participated in a weeklong walking trip in the Aurlandsdal of western Norway, in the company of a group of educators¹⁷. Among us, we shared an interest in Deep Ecology (Naess 1995), Sustainability Education and Storytelling. As we hiked through the mountains, we shared experiences and stories, drawing on the local ecology and landscape. I heard many stories and fables that I can use in my own teaching, and had a chance to reflect together within a *community of practice*.

How. To situate my learning and improve my practice as a sustainability educator, I carried out an action experiment. In the following, I will describe the methodology of this action experiment, in which I have attempted to integrate some of the theoretical and practical aspects of sustainability education, as outlined in the literature review (3), in the context of a Danish 'Folk-High-School.

2.2 The Action Experiment

I describe the process of the action experiment I have carried out as reflective practice, drawing from an array of traditions, primarily those of: action research, (Reason, 2008) (Nielsen & Nielsen 2003), systemic relational practice (Marshall, 1999) (Shotter 2012), (Shaw, 2002), as well as engaged Buddhism (Thich Nhat Hanh 1998).

I want to emphasize here the live and improvisational nature of this work. I have not been in control. Rather, I have been navigating through tensions and playing by ear. Many things have not happened according to plan, and some plans have had to be revised or given up due to circumstances beyond my sphere of influence. This is the lot of the practitioner, and it is exactly the reason I've included this approach in my dissertation.

To help you appreciate the quality of the process I've engaged in, I will borrow here Tim Ingolds (2009) poetic description on the *textility of making*:

Practitioners... are wanderers, wayfarers, whose skill lies in their ability to find the grain of the world's becoming and to follow its course while bending it to their evolving purpose. (p.92)

As said in the introduction, the aim of this dissertation is not only to gain conceptual knowledge *about* sustainable education – however necessary, useful and satisfying that is – but furthermore to

¹⁷ The trip was planned and arranged by Jorunn Barane, an educator and storyteller who teaches at Sogn Jord- og Hagebruksskule in Norway.

develop and improve my own practice as an educator *within¹⁸* this field. Thus the *evolving purpose* to which I've bent this action experiment, have been to explore in practice as well as theory an approach to education that *takes us into the depth of things* and ultimately helps the students learn to lead more sustainable lives, and bring about a life-sustaining society.

I've encountered the *grain of the world* in two ways; First as obstacles, barriers, hurdles and problems, secondly as opportunities for learning. Obstacles in the form of time constraints, fitting in with the schedule, unforeseen events, poor attention and attendance by students, as well as the whole complex situation of intervening at the end of a course already given shape by my co-teacher, history and the myriad intentions of the other actors in this *complex living system* called Vestjyllands Højskole.

Opportunities for learning in the sense – something I've come to understand through this work – that remaining mindful, alive and attentive to the emerging prospective sense-making¹⁹ of a group is perhaps the most essential skill an educator needs to master. In practice, this might mean having to *start over, change course, go back a bit,* or *fast forward* to exploring a question, concern or theme that is of interest to the group, that appears particularly alive.

Because I've aspired to remain attentive to the interests and needs of the group of students, I changed my mind and actions concerning the order, form or content of teaching throughout the two weeks we shared.

This way of working means that it has not been entirely possible to 'sit down and reflect' for extended periods, during the actual teaching. I have kept a journal and wished to reflect on the main purpose and intended learning before each taught session. But I have not formulated specific 'learning outcomes' and did not know beforehand in detail how I would evaluate the whole experience afterwards. My research questions for this part of the dissertation were deliberately vague. Thus, my process is best described as a messy improvisation. In this approach to reflective practice I resonate with the words of learning theorist Donald Schön (1995) when he notes that:

¹⁸ Drawing on Shotters (2012) distinction between researching from outside our engagements with the others and otherness around us and from within those engagements.

¹⁹ Loosely paraphrasing here the language of Patricia Shaw (2002), when she - with her work on change in organizations – challenges us to appreciate 'that we must pay proper attention to this process of prospective sense-making rather than only attempting to piece together a picture of our situation that we may then seek to change' (p.70)

The word reflection has been troublesome, because it suggests what Hannah Arendt calls a "stop-and- think", which takes place in the medium of words. It is a kind of intellectual exercise. But the reflection-in-action... can happen very quickly, in an action present. It is, for example, the kind of thing a good jazz musician does at a jazz session. Improvising, listening to how the other musicians are playing a melody, playing it differently because of what I hear you doing, and revising again as I hear your response to me. It is also is what we do in conversation. (p.5)

Thus, the following narrative should be seen as precisely that. Words woven together in sentences – chosen in speech by my students, friends, collaborators and myself – to make sense of an experience, an on going exploration.

While I have worked in such an improvisational way and thus not followed any specific research methodology throughout this action experiment, there have been phases of inquiry roughly resembling the hermeneutic cycle in action research: (Herr & Anderson 2005)

- 1. Develop a plan of action;
- 2. Act to implement the plan;
- 3. Observe the effects of action in the context in which it occurs;

4. Reflect on these effects as a basis for further planning, subsequent action and on, through a succession of cycles.

In the fourth chapter (4.3) I will describe my practical and active exploration into the question of sustainable learning. I have chosen to present this whole hermeneutic cycle as a continuous and related narrative. Writing this account, now, is my first-person inquiry into the intentions and outcomes of my teaching, my first chance to 'sit down and reflect. However, before I lay bare the quick of this experience it is necessary to situate it within its larger physical, historical and intellectual context.

2.3 The Folk High School Movement

This action experiment came about, because I was looking for a place to try out some of my ideas around teaching sustainability. Through a friend of mine – who is also a teacher – I got the opportunity to be a guest teacher for two weeks at Vestjyllands Højskole (2016) (Lange 2013)

A folk-high-school is a unique kind of educational institution, that – in my experience - requires a bit of background for someone unfamiliar with the history of Danish education.

The first folk school was founded in 1844, in Rødding, Denmark. The idea of folk high schools emerged in the 1830's, when it's originator – the Danish theologian, poet, philosopher, politician and educator N.S.F Grundtvig (1783 -1872) – sketched out it's philosophical foundations. Interestingly, Grundtvig was inspired by the English Boarding Schools – where students live in a residential community for extended periods of study – after having visited a friend in Trinity College, Cambridge. The purpose of this trip was to visit English libraries to shed light on the ancient culture and history of Denmark and Scandinavia.

However, unlike the elitist English traditional schools, Grundtvigs emphasis was on popular adult education, enlightenment, ethics, morality and democracy, rather than formal education. The guiding idea was to give farmers and other ordinary people an opportunity for education, in order to bring about a more democratic society. Of course, poor people during this period did not have the time or money required to study in a university. The idea was to enable the commoner to qualify as an active and engaged citizen and participate in the political life of society. National conservatism was a very powerful movement in Denmark during the mid nineteenth century, and an actual 'folk high school movement' emerged as a reaction against conservative educational ideas – primarily in the form of an emphasis on 'book-learning, a use of language unknown to common people and an ideal of learning where the primary relation was between the individual and the book alone' (Danish Folk High School 2016)

It is interesting to note that this movement emerged in the historical backdrop of an economic depression beginning with the Danish state-bankruptcy in 1813. Taking a long view, it seems to me that times of crisis, such as those we are experiencing at present is ripe with possibility for transforming education.

The folk high school movement soon spread throughout Scandinavia and there are even a few examples of folk schools outside the north.²⁰ Even though the folk high schools have changed through and with the times, the central ideas of Grundtvig remain as guiding principles for the 76 folk schools alive in Denmark today. I think the most significant idea within the folk high school movement is 'Lifelong learning'. We are talking about an education for life. The questions explored are those related to living, as individuals and citizens. The Danish-American scholar of adult education Eduard Lindeman (1925) – who referenced Grundtvig and the folk high schools as a primary influence – explains how 'Adult education is a co-operative venture in non-authoritarian, informal learning the chief purpose of which is to discover the meaning of experience; a quest of the mind which digs down to the roots of the preconceptions which formulate our conduct; a technique of learning for adults which makes education coterminous with life, and hence elevates living itself to the level of an experiment.'(p.3)

Grundtvigs concept of 'The living word' is essential here. Put simply, he proposed that people learn most effectively by talking with each other, speaking out, forming our own opinions, ideas and understandings in order to express them coherently to other members of our community.

Lastly the enlightenment concept of 'dannelse' ('formation' in English or 'bildung' in German) was important. Grundtvigs use of this term – which is arguably the most commonly shared interpretation in Denmark today – aims to give peasants, small farmers and workers – 'the whole of the common folk' – a unifying point of reference in relation to language, history, culture and religion. This understanding of 'formation' is closely related to an understanding of what it is that makes us Box. Key features of the folk high schools. School for Life No Exams (entrance or final) Collegial atmosphere Communal Living The Living Word Variety of subjects Dialogue Personal Development Pedagogical freedom Lifelong Learning

human. For Grundtvig it is our self-awareness, our ability to create a mental image of ourselves and thus explore the question "Who am I?" Thus, formation is not a fixed quality of an individual but rather a continuous process of transformation and self-discovery. Grundtvig called this process of

²⁰ My personal favourite being The Highlander Folk School, attended among many others by Martin Luther King, Septima Clark, Rosa Parks, John Lewis and Eleanor Roosevelt. There is a very good book by its founder Myles Horton called The Long Haul)

self-awareness and learning to participate in community 'the formation and capability for life in the here and now.- Grundtvig was very critical of the dominant system of schooling at the time, with it's emphasis on studying classics and Latin, calling it a 'school for death', because he saw it as solely relevant for participation in an erudite academic world. In a seminal text "A School for Life and the Academy in Soer" (1838) he presents his idea of the purpose of education as 'formation' for living in the geographical and historical specificity of contemporary society. He proposes the creation of an academy, a school for "the living, the common and ordinary'²¹

Dead are all letters, even if written by an angels hand with a heavenly quill, And dead are all conceivable book knowledge, That does not coalesce with a corresponding life of the reader. – N.F.S Grundtvig²²

The reason I think this historical context is important, is that one of my key inquiries in this work is the question: what is the meaning of such 'formation' today, and how can we develop a new kind of 'sustainable formation', 'ecological citizenship' or 'ecoliteracy' in the context of the Danish Folk High School movement. In the same way that it is necessary to educate for democratic participation, it is my understanding that creating a sustainable – rather than an unsupportable and destructive – life form is a process of continuous learning across society as a whole.

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²¹ Det Levende, det Fælles og Almindelige

²² My own translation from "Skolen for Livet og Academiet I Soer, 1838, p. 12

3. Review and Synthesis - Engaging with relevant literature

Do not think the knowledge you presently possess is changeless, absolute truth... Truth is found in life and not merely in conceptual knowledge. Be ready to learn throughout your entire life and to observe reality in yourself and in the world at all times. – Thich Nhat Hanh (1993) 2nd of the 14 precepts of engaged Buddhism

This chapter consists of three parts. The first sets out the *purpose* and aspirations for a kind of *'education that takes us into the depths of things'*, reviewing understandings from psychology of how human learning and change happens. The second addresses the *content* of what could be considered transformative sustainability education. The third explores the *practice* or pedagogical implications and considerations of the previous two, by drawing in particular on mindfulness as a useful educational tool.

2.1 Understanding Learning and Change

The only person who is educated is the one who has learned how to learn and change. - Carl R. Rogers (2013)

Learning is perhaps the most essential ability of human beings, and a defining feature of life. From a biological point of view, learning is a matter of life and death. Any organism that does not learn from and adapt to its surroundings will not survive. Learning is a complex phenomenon, and a very broad concept without any generally agreed upon definition. Throughout the past months I have studied an abundance of different theories of learning and change, to get an impression of the old and new thinking most pertinent to my inquiry. The list is quite comprehensive and too extensive to attempt to cover in a few paragraphs and thus, in the following I will only review the understandings and definitions of learning and change I have found to be most relevant to this exploration of sustainability education and social transformation.

Two processes, three dimensions

Knud Illeris (2007) provides a useful and broad definition of learning as "any process that in living organisms leads to permanent capacity change and which is not solely due to biological maturation or ageing" (p. 3). Broadly speaking, I am exploring what learning processes could lead to an individual and collective capacity for living sustainably. Illeris also (2009) proposes a general and constructivist model of learning, based on the idea of two basic processes and three dimensions:

According to Illeris all learning 'implies the integration of two very different processes, namely an external interaction process between the learner and his or her social, cultural or material

environment, and an internal psychological process of elaboration and acquisition' (p.9). In order for any learning, both of these processes must be involved. I find Illeris holistic conception of learning useful exactly because it emphasises both interaction and acquisition, where many contemporary learning theories focus exclusively on one. When considered together, the two processes of learning make up a triangular field (see figure 1), with the angles representing three dimensions of learning. In summary (Illeris 2009, p.10):

- 1. The content dimension concerns what is learned... knowledge and skills... opinions, insight, meaning, attitudes, values, ways of behaviour, methods, strategies, etc... The endeavour of the learner is to construct meaning and ability to deal with the challenges of practical life and thereby an overall personal functionality is developed.
- 2. The incentive dimension provides and directs the mental energy that is necessary for the learning process to take place. It comprises such elements as feelings, emotions, motivation and volition. Its ultimate function is to secure the continuous *mental balance* of the learner and thereby it simultaneously develops a personal *sensitivity*.
- 3. The interaction dimension provides the impulses that initiate the learning process. This may take place as perception, transmission, experience, imitation, activity, participation, etc. It serves the personal integration in communities and society and thereby also builds up the sociality of the learner.

Illeris also notes the integral connection between the emotional and cognitive dimensions, in the learning process. This is particularly relevant because our emotions are closely related to our judgements of value and ethics. Eilam and Trop (2011) argues that emotional learning is an essential principle for education for sustainable developement pedagogy because "emotions concern what gives meaning to life; they frame, transform and make sense of our perceptions, thoughts and activities" (p.10) This understanding is echoed in Golemans (2012) work on the relationship between ecological and emotional



Figure 1 - The Learning Triangle – Source: (Illeris 2009, p.10).

literacy. Thus, the incentive dimension is necessary to include in a holistic approach to sustainability education, because the "value and durability of the learning result is closely related to the incentive dimension of the learning process." (Illeris 2009 p.12)

Based on the experiential learning theory of Kolb (1984), Dieleman and Huising (2006) have researched the importance of emotion and intention in sustainability education (p.838), finding that it is often missing. They identify an urgent need for 'paradigm, context and practice changes' (p. 837), suggesting that since education for sustainable developement requires 'that the student develops a certain emotional relationship with the subject of study, education should also rely on apprehension and intention.' (p.840)

In some representations, the triangle is surrounded by a circle, to indicate that all learning happens within a societal context, which is of great significance for the learning possibilities. (Illeris 2006, p.39). I have taken the liberty to add another circle encapsulating the whole model – the ecosphere – to indicate my emphasis on creating a fundamentally ecological vision of education.

Four types of learning

Illeris has elaborated the learning theories of Piaget (1952) and outlines four distinct types of learning. The triangle model introduced above is based on a concept of learning as *mental structures, patterns or schemes* (Illeris 2009 p.12), constructed by the learner. Thus, learning is understood as the mental reorganisation of these structures as the result of new impulses, arising from the interactions between learner and environment. Illeris distinguishes between four types of learning which are "activated in different contexts, imply different kinds of learning results and require more or less energy." (ibid. p.13) In summary, the four types are (Ibid.):

- *Cumulative* or mechanical learning... characterised by being an isolated formation, something new that is not a part of anything else. Keywords: automation, conditioning.
- *Assimilative* or learning by addition... meaning that the new element is linked as an addition to a scheme or pattern that is already established. Keywords: gradual, competence, skill.
- *Accommodative* or transcendent learning... implies that one breaks down an existing scheme and transforms it so that the new situation can be linked in. Keyword: reconstruction. Keywords: understanding, internalisation.
- *Transformative* learning... implies what could be termed personality changes, or changes in the organisation of the self... Keywords: significant, expansive, transitional. Identity.

These distinctions have important implications for my inquiry. When considering *education as sustainability*, it seems to me that the types of learning most relevant would be the accommodative and transformative. I am suggesting that the kind of change needed, to achieve a more sustainable

society, is one that breaks down and transforms existing mental schemes and patterns – what Meadows (1999) refers to as changing or transcending paradigms.

I see an interesting parallel between our situation as a culture, and the way Illeris (2009) describes how transformative learning "typically occurs as the result of a crisis-like situation caused by challenges experienced as urgent and unavoidable, making it necessary to change oneself in order to get any further." (p.14) This is exactly the situation we are in, given the challenges of the ecological crisis, global resource depletion and climate change.

This central distinction between assimilation and accommodation²³ shares similarities with several other learning theories, such as Kolb's (1984) divergent and convergent knowledge, Chris Argyris and Donald Schön (1992; 1996) concepts of single and double loop learning, and Per-Erik Ellström's (2001) distinction between adaptation-oriented and development-oriented learning.

Thus the first important distinction is between a first-order learning that is concerned with doing more of the same more efficiently or 'doing things better', and second-order learning implying changes in thought or 'doing better things'.

Attempting to sketch out the conceptual grounds of a transformative learning approach to sustainability Sterling (2010) highlights the importance of Batesons (1972) addition of a third order of learning, what he calls 'epistemic learning' or:

the experience of seeing our worldview rather than seeing with our worldview so that we can be more open to and draw upon other views and possibilities. The case for transformative learning is that learning within paradigm does not change the paradigm, whereas learning that facilitates a fundamental recognition of paradigm and enables paradigmatic reconstruction is by definition transformative. (p. 23)

²³. Illeris (2009) points out that "whereas cumulative learning is most important in early childhood, and transformative learning is a very demanding process that changes the very personality or identity and occurs only in very special situations of profound significance for the learner, assimilation and accommodation are... the two types of learning that characterise general, sound and normal everyday learning." (p.15)

Commenting on the pedagogical and methodological challenges of realising sustainable education Sterling (2010) observes that:

Most learning promoted in formal education in schools and higher education is of the first order variety, being content-led and externally focussed, and often delivered through transmissive pedagogies within a consensually accepted framework of values and purposes. (p.22)

Following from this, the second important distinction, i want to introduce, is between two types of educational methodology; transmissive and transformative (Sterling 2001, p.38).

The underlying metaphor for the transmissive methodology is what Paulo Freire (2007) popularly termed 'banking education', where students minds are perceived as empty accounts, that are slowly and steadily stocked by a teacher transferring information from the 'central bank of knowledge'. In this kind of education teachers hold authority and students are perceived as:

Adaptable, manageable beings... The more completely they accept the passive role imposed on them, the more they tend simply to adapt to the world as it is and to the fragmented view of reality deposited in them.' (Freire 2007 p.60)

In a transformative approach, education is seen as constructive and participative. (Shor 1992) Transformative learning emerged as a concept in the late seventies, from Jack Mezirows (1978, 1991) work with adult education courses in the early women's liberation movement. Mezirow defines transformative learning as involving changes in 'meaning perspectives', 'frames of reference' and 'habits of mind' explaining how it:

refers to transforming a problematic frame of reference to make it more dependable ... by generating opinions and interactions that are more justified. We become critically reflective of those beliefs that become problematic. (Mezirow, 2000 p.20)

However, Illeris (2014 – a) recounts how this definition has often been criticized for being too narrow and cognitively focused, and goes on to develop a redefinition of transformative learning as: 'All learning which implies changes in the identity of the learner.' (2014–b, p. 40) I find this definition both helpful and useful, because it gives central importance to the social and relational elements of learning. We are social and ecological beings and our self and identity develops through a constant conversation or interaction with our social and natural environment.

The Norwegian philosopher Arne Naess (1995; 2008), whose work on '*deep ecology*' has been an important influence on this dissertation, introduced the idea of the 'ecological-self', as everything with which we identify²⁴. Naess makes a distinction between our *ego* and *self*, inviting us to transcend a narrow conception of our identities as isolated islands. He argues that the reason that a lot of environmentalism fails to achieve behavioural changes is that it is fundamentally appealing to people to be altruistic towards 'the environment', or 'doing good for the other', creating a separation between the ego and the world. If, instead, we experience ourselves as branches on the tree of life or as 'plain members and citizens of biotic communities' (Leopold 2001), ecologically responsible behaviour becomes a kind of self-interest.

With the introduction of these distinctions I hope to provide a language that allows me to begin approaching the meaning of Schumacher's call for a 'different kind of education, that takes us into the depth of things'.

An education that takes us into the depths of things

Environmental Education is not the same kind of education that enabled us to industrialise the Earth. On the contrary, The kind of education we need begins with the recognition that the crisis of global ecology is first and foremost a crisis of values, ideas, perspectives, and knowledge, which makes it a crisis of education, not one in education. – David Orr^{25}

Another way of picturing the kind of learning that is envisioned, is through physicist David Bohm's (1992) understanding of thought as a system. Based on Bohm's distinctions Sterling (2010, p. 21) presents a model of different 'levels of knowing'.

I find this 'nesting systems model' instructive because it presents a hierarchy of change and suggests that

Deeper perceptions and

Actions · Ideas - Theory Norms - Assumptions Beliefs - Values et aphysics - Cosmology

Figure 2 - Levels of Knowing

²⁴ Niki Harré uses the term ecological identity defining it thus: "The essence of an ecological identity is a feeling that you are not restricted to your physical body, but are in some important way connected to nonhuman nature." (p. 82) ²⁵ (2004 p.126)

conceptions inform, influence and help manifest more immediate ideas and they, in turn, affect more everyday thoughts and actions. A second point arising from this model is that the influence of deeper assumptions may not be consciously recognised. Our assumptions are operative, but may lay largely unexamined.' (p.21)

The kind of epistemic learning implied here can be experienced as very challenging and even uncomfortable for the learner, because it 'involves a restructuring of basic assumptions caused by the recognition of incoherence between assumptions and experience' (Sterling 2001, p.25)

Echoing Illeris' (2007) and Bateson's four types of learning, Sterling (2001 p. 11; 2003 p. 129) draws a parallel between our collective, educational and personal response to the sustainability challenge by describing four levels of learning:

- No response (ignorance/denial/no learning)
- Accommodatory response (adaptive learning, paradigm unchanged)
- Reformatory response (reflective adaptive learning, paradigm modified)
- Transformative response (critical and creative learning, changing paradigm)

I find these distinctions instructive when considering our collective and individual responses to the present sustainability crisis, because they provide a lens through which to understand the kind of change needed in our educational practices. Unfortunately it seems that most education is still largely stuck in the first two responses, either denying completely the need for change, or at best 'bolting-on' education *about* sustainability, while the underlying paradigm remains unchanged.

So how do you transform a paradigm? Systems scientist and writer Donella Meadows (2008) answers the question, by summarising the lessons from Thomas Kuhn's (1962) study of the nature of scientific revolutions and her own experiences from a lifetime in the field of systems modelling:

You keep pointing at the anomalies and failures in the old paradigm. You keep speaking and acting, loudly and with assurance, from the new one. You insert people with the new paradigm in places of public visibility and power. You don't waste time with reactionaries; rather, you work with active change agents and with the vast middle ground of people who are open-minded. (Meadows 2008, p.164)

In conclusion, a transmissive and instrumental approach to the purpose learning as solely a matter of the acquisition of unrelated skills and conceptual knowledge is clearly insufficient. What I hope
to have presented above is an argument for a concert of assimilative, accommodative, transformative and ultimately epistemic learning at the deepest levels of paradigm and worldview. If education is to respond appropriately to the sustainability challenge, it will have to undergo significant transformative learning across all the levels introduced above, from the individual student, to the teachers and employees, the educational institutions, and eventually our cultural paradigms and worldviews.

Barriers and opportunities for change

Before moving on I want to briefly consider what modern psychology has to say about why learning and change is often so difficult. If all the scientists at the IPCC are saying that climate change is anthropogenic, and that we need to radically change our way of life, why don't we just do it? Today, we know more about greenhouse gasses and climate than ever before, almost all nations agree that we should attempt to mitigate it, and yet our global emissions keep rising year after year. A strange paradox, it seems that there is no or very little relationship between our knowledge and understanding of the problem, and our will and ability to act for change.

Cognitive Dissonance

In his book 'What we think about, when we try not to think about global warming' Norwegian psychologist and economist Per Espen Stoknes (2015) sheds light on this paradox. He describes what he perceives as the main reasons why climate communication has not achieved its goals, but rather alienated a growing number of people. Attitudes can be defined as "Learned predispositions to respond in a favourable or unfavourable manner to a particular person, behaviour, belief or thing." (Lindzey & Aronson 1985), and they are embedded internally (cognitive and emotional) as well as externally (social and environmental). Box. The ABC Model of Attitudes Attitudes consist of three main parts. And affective or emotional component: What feeling is connected to the thing, person, issue, or event? A behavioural component: What kind of action or readiness for behaviour lie dormant in the attitude? cognitive component: what А thoughts, knowledge, and believes come up from memory when

attending to the issue?

Source: (Stoknes 2015, p.57)

Stoknes' central point is that the scientific community has been too narrowly focused on communicating the facts and data, thus addressing the cognitive parts of the human psyche, while forgetting the social and emotional aspects. Figuratively speaking, climate communication has been addressing the head, while forgetting the heart. Stoknes has identified five common psychological barriers to climate action²⁶:

- 1. **Distance.** We can't see climate change. The melting glaciers are far away. Climate change feels distant from everyday life.
- 2. **Doom.** If climate change if framed as an encroaching disaster, it creates a wish to avoid the topic. No one wants to feel helpless.
- 3. **Dissonance.** If what we know, conflicts with what we do, dissonance sets in. By doubting or downplaying what we know, we can feel better about how we live. Thus, actual behaviour and social relations determine the attitude in the long run.
- 4. **Denial.** When we negate, ignore, or otherwise avoid acknowledging the unsettling facts about climate change, we find refuge from fear and guilt. Denial is based in self-defence, not ignorance, intelligence, or a lack of information.
- 5. **Identity.** We filter information through our cultural identity. We look for information that confirms our existing values and notions, and filter away what challenges them. We resist calls for change in self-identity.

Stoknes explains how these barriers blocks out climate communication and prevents people from changing their thoughts and actions concerning sustainability. I believe that this model holds important insights for sustainability educators, who will have to learn creative ways of moving across or around these barriers. Stoknes turns the barriers 'upside down' offering five recommendations for how to circumvent them (p.90):

- Make the issue feel near, human, personal, and urgent.
- Use supportive framings that do not backfire by creating negative feelings.
- Reduce dissonance by providing opportunities for consistent and visible action.
- Avoid triggering the emotional need for denial and fear, guilt, and self-protection.
- Reduce cultural and political polarisation on the issue

Stoknes and others (Harré 2011; Drake 1991) have pointed out the primary importance of identity in the perception of risks and the prioritisation of action in relation to environmental problems. The term 'confirmation bias' is used to describe the way in which we seek out and accept information that fits with our worldview, while rejecting everything else. Unfortunately, it seems that 'environmentally conscious behaviour' is often perceived as tied to a particular cultural identity, or even political affiliation. This creates a significant barrier for new information and habit changes for people who does not identify as belonging to such a group. This point relates again to the concept of ecological self or identity. How can sustainable education help bring about a sense of

²⁶ The list is my abbreviated and slightly edited version of the list of barriers from Stoknes (2015 p.81-83) I have chosen the points I found most relevant to this context.

how peoples own wellbeing is connected to and interdependent on the thriving of other living beings, the air and the soil?

The Buddhist concept of 'interbeing' is helpful here. In his book the 'Heart of understanding' Zen Buddhist teacher Thich Nhat Hanh (2005) writes:

If you are a poet, you will see clearly that there is a cloud floating in this sheet of paper. Without a cloud, there will be no rain; without rain, the trees cannot grow; and without trees, we cannot make paper. The cloud is essential for the paper to exist. If the cloud is not here, the sheet of paper cannot be here either. So we can say that the cloud and the paper inter-are... To be is to interbe, you cannot just be by yourself alone. You have to inter-be with every other thing... Suppose we try to return one of the elements to its source. Suppose we return the sunshine to the sun. Do you think that this sheet of paper would be possible? No, without sunshine nothing can be. (p.3-4)

Thus, from a Buddhist perspective, suffering comes about because of what is seen as a narrow and limited perception of our self as independent, disconnected individuals, and the awareness that what we call our self consists of non-self elements leads to the end of suffering.

Climate science now shows how this interconnectedness exists across time and space. We are just now beginning to truly appreciate the intricate relationships between climate, geography and life itself. (Lovelock 2000; Harding 2009)

Another important barrier to a change in attitudes towards sustainability is what psychologists call 'cognitive dissonance':

[It] refers to a situation in which there are conflicting feelings, thoughts, and behaviours. It is an uncomfortable inner tension. It only dissolves when one or another of the components changes and harmony is restored. (Stoknes 2015 p.61)

This seminal idea was originated by social psychologist Leon Festinger (1957; 1964), who famously predicted that 'The Seekers' – a group of believers in UFO's who had prophesised the impending destruction of the world – would not change their attitudes and beliefs even after the predicted apocalypse didn't happen. His prediction came true, theirs didn't. Instead of changing their minds, the group became convinced that their own goodness and dedication had prevented the end of the world, and they became ever more fervent believers.

Festinger's (1957) hypothesis of cognitive dissonance says that:

"The existence of dissonance, being psychologically uncomfortable, will motivate the person to try to reduce the dissonance and achieve consonance... When dissonance is present, in addition to trying to reduce it, the person will actively avoid situations and information which would likely increase the dissonance." (p.3)

The theory explains how instead of changing our actual behaviours, it is much more convenient to change the way we think about the way we act.

Consider the example of eating animals. I have many friends – who eat meat while striving to live sustainably and would say that they care for the environment. Personally, I am a vegetarian, but I also occasionally eat fish, for reasons I hope to elucidate in the following. I am very aware (thoughts) of the negative environmental impacts of meat consumption, as well as the suffering of the animals involved, and thus I am committed to consuming (behaviour) food that is less harmful, because I feel (feelings) that is the right thing to do. Sometimes though, one of these components changes. Often, when I am a guest in the home of a friend or in my family – who knows about my values and preferences – I am offered fish to eat. In this situation, different things can happen, and some things tend to happen more often. Based on my knowledge of overfishing and a feeling of reverence for life, I could – and often do – choose to reject the offer and adjust my behaviour. However, this creates another problem -a feeling of being an outsider to the group, or fear of a negative response from the other people, perhaps because of dissonance on their part. Thus, what usually happens is some form of rationalization such as "at least it's not meat from a factory farm" or "there is still plenty of fish in the sea". Of course, all of this happens very quickly, and mostly subconsciously. Interestingly, I have also observed that when I make this sort of decision more often, it can have a kind of 'spillover effect', causing me to make many other less sustainable choices, even when the social pressures are not that present. It's easy to fall into the trap of thinking it's 'all or nothing', so that if I can't do everything in accordance with my values, there is no point of doing anything.

Many studies have shown how cognitive dissonance affects our everyday lives. A lot of people respond positively to questions about behaving in more environmentally conscious ways, while subsequent research into their actual behaviour shows very little or no change. (p.61) Countless

factors influence our ability to act more sustainably, many of them subconscious or beyond our immediate influence.

No one is an island, and our actions are always influenced by what we see around us. Our dreams, goals, and visions reflect what we believe is possible. We imitate the actions of our peers, and we are meaning makers who seek out cues in our environment on how to make sense of our existence. If we are immersed in a culture where unsustainable goals and behaviours dominate the picture, our tendency for imitation makes it almost impossible to change. Understanding this dynamic might compel us to take a step back, and reframe sustainability as a collective social and cultural venture. Rather than focusing exclusively on the many problems and attempting to influence individuals to change through fear or guilt, we can see it as a collective endeavour, and work on many levels to make the right choices easier.

In her book 'Psychology for a better world', Niki Harré (2011) also address the problem of behaviour change, explaining how it makes her feel uneasy, when sustainability advocates talk about other peoples need to change: 'It implies that some of us know exactly what is needed, and the only issue is how to set in motion the conditions that will compel others to comply.' (p.8), rather than this slightly patronizing approach, she champions

Showing, persuading and inspiring people to join in, so they themselves become active and creative advocates for a sustainable world... there are many people who would like to play a role, if even a tiny one, in the creation of a better world. They are the ones to look out for and nurture, not just because you can take them forward, but because they can take you forward too. (p.9)

Three levels of action

Looking now at the opportunities for change, it is helpful to distinguish between three levels of action²⁷: personal, group, and civic level. Seeking change at these levels can both complement and contradict each other, and the challenge according to Harré is how to discover potential synergies between them.

²⁷ With reference to primarily to Harré (2011 p.161), while also echoing Hannah Arendt's (1998) distinction between the three activities of human life: *labour, work, and action*. Where labour is concerned with the provisioning of the necessities for survival, work is what creates the artefacts that constitute our world, while action is the political or civic activity that happens as a result of our attempt to live together.

The **personal level** concerns how we live. It is the level most often referred to in public discussions about sustainability. The challenges around barrier, identity, and cognitive dissonance discussed in the previous sections appear most visibly at this level. It concerns questions such as: How do you eat? How much garbage do you make, and where do you put it? How do you get around? What do you purchase? And where do you go in your spare time? Even though action on this level can cause difficulties, it is important for multiple reasons. The classic economic argument has to do with signals. Besides the direct environmental impact when we purchase a particular product, we also send out a pulse, a market signal, telling business, politicians and fellow citizens that something is valuable to us, and we want more of it. Keeping in mind our tendency to imitate our peers, listening to the signals of those around us is what allows us to copy and repeat a particular pattern of behaviour. The other importance of acting at this level is that it gives you credibility as a sustainability advocate. People tend to pay more attention to what we do, than what we say. If our actions are inconsistent with our stated intentions, people will notice and may lose confidence in our sincerity.

And most importantly, we need to learn to be kind and patient with each other, and ourselves because as historian Howard Zinn (1964) reminds us "we don't have to engage in grand, heroic actions to participate in the process of change. Small acts, when multiplied by millions of people, can transform the world." Even the smallest acts of empathy, solidarity and kindness in which we engage, water good seeds and can eventually grow to become the *'invisible roots of social change'* (p.24).

The **group level** concerns our actions as a community. This level is important for the simple reason that there are many things we cannot achieve on our own. Founder of the Transition Movement Rob Hopkins expressed this provocatively and beautifully writing:

Just in case you were under the impression that Transition is a process defined by people who have all the answers, you need to be aware of a key fact. We truly don't know if this will work. Transition is a social experiment on a massive scale. What we are convinced of is this: if we wait for the governments, it'll be too little, too late. If we act as individuals, it'll be too little. But if we act as communities, it might just be enough, just in time.²⁸

²⁸ Excerpt from the website of the transition network (https://transitionnetwork.org/support/what-transitioninitiative)

Consider for example the question of creating a more sustainable food system. Individually, we can choose to purchase organic or fairtrade products, if we can afford them and they are available in our local shops. Collectively we can organise to create a food cooperative, deciding ourselves exactly what we want to consume, while making it more affordable by keeping the generated wealth and resources in the coop, rather than giving distributing profit to shareholders. I have been a part of setting up such a food cooperative in Copenhagen, and besides allowing me to purchase affordable organic vegetables, it has also given me and all the other hundreds of members in my city a sense of community and friendship. There are even significant signs that the success and enormous growth of this model has influenced several other retail stores' purchasing policies to favour more locally sourced vegetables.

"Ultimately, any response that is sufficient to the scale of the challenge is about coming home, about being aware that we're part of the networks around us, that we need to nurture and rebuild them, rather than imagining that we can survive independently of them. Indeed, we could see a belief that we can exist and flourish independently of the community around as being a dubious 'luxury' of the age of cheap oil. We will have to learn to meet and greet each other once again, as well as learning how to cooperate and communicate." - Rob Hopkins²⁹ in 'The Transition Handbook'

Another reason the group level is important, is for the psychological and social reasons explored above:

"People are deeply social, and unless we feel we're acting alongside others, most of us haven't got the stamina to keep going. Groups provide us with a social identity, something we may take pride in and feel accountable to." (Harré 2011 p.165)

However working at this level can be as challenging as it is rewarding. Anyone who has been involved in activist groups or environmental organizations can testify to the difficulties of navigating the endless discussions concerning strategies and priorities, and encountering burnout. As Johnstone and Macy (2012) puts it in their book on the subject of 'active hope - how to face the mess we're in without going crazy': When we catch the spark of heartfelt activism for our world, that inner fire can be a remarkable source of energy. However, it also brings with it the risk of burnout" (p.213)

They suggest five strategies that can help people suffering from burnout (Ibid.):

²⁹ (2008 p.81-82)

- Recognise enthusiasm as a valuable renewable resource.
- Broaden our definition of activism.
- Follow the inner compass of our deep gladness.
- Redefine what it means to have a good life.
- See success with new eyes and savour it.

The **civic or systemic level** concerns political action, democratic participation and active citizenship. Groups, as well as individuals can organize to act at this level in order to shape policies, organizations, institutions, government or public opinion. Civic action does not have to be grand in scale, it can include small things such as voting at elections, joining political parties, signing petitions, attending demonstrations, writing a blogpost or newspaper article. The important distinction here is that any action is aimed towards more overarching or systemic change.³⁰

Niki Harré (2011 p.168) calls attention to two challenges to working at this level. The first is trying to maintain integrity and truthfulness in a game with rules that rather seems to favour and reward things such as simplification, competition, misrepresentation, polarization and outright dishonesty. The second risk is the difficulty of measuring progress. How do you know if you're getting anywhere. In most cases you simply won't. This is where we have to learn to cultivate a long view, what David Orr (2004 p.122) calls 'educating a constituency for the long haul'. Harré conducted interviews with environmental activists around the issue of the uncertainty of outcomes, and found two very interesting results:

One was that they *knew* for sure that the world needed to change, and they could not turn their backs on that knowledge by failing to take political action. They also knew that if people with their values did not participate in the civic realm, this *would* certainly lead to the dominance of other values" (p.169)

Many people seem to agree that the civic or systemic level is important (Harré 2011), and many will argue it is the most important. However, I think too many discussions about sustainability begin and end with this dead end question of which level is most important, as if they are mutually exclusive. It seems to me that it makes more sense to consider the levels as mutually interdependent and reinforcing. How would you go about trying to change public opinion (systemic), without embodying your values through your own actions (personal) as well as having the support and

³⁰ Donella Meadows (1999) stressed the importance of paradigm change as a leverage point. A change in public opinion, can ripple through all of societies institutions.

collaboration of at least a few others (group) who share your perspective? And in the same way, the small personal actions can often seem insignificant and futile, without the support of peers and eventually systemic changes in society. My own realisation of this problem occurred when I read the 'Limits to Growth' (Meadows 1972) in my early twenties. Suddenly, the completely interconnected nature of the global economic system dawned on me, as I read through this seminal work. Since then I've seen the earth as one whole system.

The Macroscope

There can be disappointments and dangers in limiting one's view to an area that is too small. There are many examples of a person striving with all his might to solve some immediate, local problem, only to find his efforts defeated by events occurring in a larger context. A farmer's carefully maintained fields can be destroyed by an international war... Indeed there is increasing concern today that most personal and national objectives may ultimately be frustrated by long-term, global trends – Donella Meadows³¹

I've illustrated the 3 levels of action as three concentric circles (see figure 3), to give a sense of their interconnection. Learning and action happens throughout society, across scales, groups and institutions. (Illeris 2013) We learn and change in our workplace, at home, in our family and in all of the groups and contexts we participate in. The key idea is that the art of acting towards a more



Figure 3 - The Macroscope

³¹ (1972 p.18)

sustainable world requires one to identify synergies and connections between the three levels. One of the reasons it can seem overwhelming to engage in actions for sustainability is that it can be very difficult for us to perceive how what we do makes a difference in the grand scheme of things. It is easy to end up feeling hopeless and disempowered. We need tools to help us see the whole picture. This is why we need to cultivate whole systems thinking³², feeling and being. Biologist and philosopher Joel de Rosnay (1979) introduces the idea of a new instrument of perception: the macroscope (from *macro*, great, and *skopein*, to observe):

The macroscope is unlike other tools. It is a symbolic instrument made of a number of methods and techniques borrowed from very different disciplines... The macroscope can be considered the symbol of a new way of seeing, understanding, and acting... The macroscope filters details and amplifies that which links things together. It is not used to make things larger or smaller but to observe what is at once too great, too slow, and too complex for our eyes (human society, for example, is a gigantic organism that is totally invisible to us). Formerly, in trying to comprehend a complex system, we sought the simplest units that explained matter and life: the molecule, the atom, elementary particles. Today, in relation to society, we are the particles. This time our glance must be directed toward the systems which surround us in order to better understand them before they destroy us. The roles are reversed: it is no longer the biologist who observes a living cell through a microscope; it is the cell itself that observes in the macroscope the organism that shelters it." (p.6-7)

The person at the centre of my drawing (figure 3), is looking through such a macroscope in order to perceive the complex interconnections between the near and the distant, the big and small, the fast and slow, the personal and political, the local and global. Actions for change at any of the three levels can both strengthen or weaken change in the others, like a reinforcing feedback loop (figure 4 – three levels of action). Thus, we can begin our sustainability journey by identifying our personal values, barriers and possibilities for change, we can organize ourselves through the commons that we share in our local community, and



Figure 4 - Three levels of action

³² Which I will explore in the next section

eventually affect the larger political and economic systems of which we are a small but potentially significant part. The next time you find yourself pondering the question: should we work to change the structures of society from the outside or from within? The answer is yes.³³

The three dimensions of the great turning

The last framework I want to introduce concerning learning and change comprise the three dimension of what Joanna Macy (2014, p.6) calls 'The Great Turning'. Lester Brown (2009) calls it the ecological revolution. Donella Meadows (2004) calls it the sustainability revolution – or the third revolution³⁴. The uniting idea is that if we want to survive as a species we need a conscious transition from an 'industrial growth society'³⁵ to a 'life sustaining society'. Macy (2014 p.3) writes:

"Our political economy requires ever-increasing extraction and consumption of resources. To the industrial growth society, the Earth is supply house and sewer. The planet's body is not only dug up and turned into goods to sell, it is also a *sink* for the often toxic products of our industries. If we sense that the tempo is accelerating, we are right – for the logic of the industrial growth society is exponential, demanding not only *growth*, but rising rates of growth and market share... Buddhist social thinkers see what is at work here as institutionalised forms of the three mutually reinforcing *poisons* at the root of all human suffering: greed, aggression and delusion."

From a systems point of view, our present economic system is doomed because it is based on exponential growth in exploitation and depletion of it's own life-support systems. Macy goes on to describe her vision of a Life-Sustaining Society that "operates within the carrying capacity of its life support system, regional and planetary, both in the resources it consumes and wastes it produces...' (p.4). The three dimensions of change necessary according to Macy are (p.6):

Holding actions to slow the damage to Earth and its beings. (Such as research and documentation of the negative impacts on people and environment – protest and demonstrations – writing letters, blogs and books – giving talks, showing films – organizing – civil disobedience – helping, supporting and caring for people in danger or persecuted)

³³ This somewhat naughty, but brilliant answer was given in reply to a journalist, by my teacher at Roskilde University Birger Steen Nielsen. (1999; 2003)

³⁴ With the agricultural and industrial revolutions being the first and second.

³⁵ Norwegian Eco philosopher Sigmund Kvaløy Setreng (1993), used this term to describe a society "aiming for--and its success is measured against--linear or accelerating expansion of the production of industrial commodities and services and the use of industrial method--standardized mass production, concentration in a few, urbanised centres, carried out by specialists on all levels... there is only one historical example of this kind of society, our own, which is tending to become global" (p. 121).

These are essential because they buy time and save lives, ecosystems, species and cultures for the life-sustaining society to come. However, by themselves, holding actions are not enough to bring this society into being.

- Transformation of the structures and foundations of our common life. (Such as studying and understanding the way the industrial growth society works and developing models and structures to replace it, learning better ways to serve the common good social and ecological enterprises, ecovillages, food-cooperatives, permaculture courses community land trusts and community owned business ethical banking, local currencies, sharing community organizing, consensus democrary labour rights and environmental legislation, conflict resolution, nonviolent communication renewable energy, wind, solar, tidal and geothermal circular economy, zero-waste, composting, reduction and recycling 'building the new within the shell of the old')
- Shifting worldviews and values. (Such as sustainable, ecological or environmental education engaged Buddhism, and similar currents in many other religions and cultural traditions that understands and teaches the *interbeing* of all life, the *unity* and *diversity* of nature systems science, holistic science, ecology and sustainability science art, music, poetry, writing, storytelling, theatre and film) The actions we take and structures we build mirror how we relate to the Earth and each other. They require a shift in our perception of reality.

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2.2 Thinking in Systems – cultivating a relational worldview

"The major problems in the world are the result of the difference between how nature works and the way people think" - Gregory Bateson

... The unhealthiness of our world today is in direct proportion to our inability to see it as a whole - Peter Senge³⁶

No problem can be solved from the same consciousness that created it. We have to learn to see the world anew. - Einstein³⁷

Fragmented thinking in an interdependent world

These three quotes point to a central idea throughout this thesis: the need for a change in thought. In this section, i am going to explore the questions of what is perceived as the problems with the present dominant paradigm or 'ways of thinking and perceiving' and towards what ways a change is proposed. What is meant by more 'systemic, relational and ecological' ways of thinking, knowing, doing and being? What is implied by 'learning to see the world anew'?

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Throughout the past decades we have seen – along with the early warnings of the growing environmental crisis – a growing call for changes in thought. (Bateson 1972, Laszlo 1997, Bohm 1992, Korten, 1999, Sterling 2003, Meadows, Orr 1992, 2005, Capra 1982)

In this conception the challenge of sustainability becomes a question of a change in consciousness, as much as it is about practical knowledge and technological solutions. In his thesis on 'whole systems thinking as a basis for paradigm change in education' Sterling (2003: 98) reviews these calls for new ways of thinking, and notes that the use of terms such as 'integrative', 'holistic', 'systemic', 'connective', and 'ecological' are rarely fully developed, especially in relationship to environmental education discourse.

In the following I will attempt to draw out the meaning and some defining features of what I have come to understand as a *systemic, dynamic, ecological, relational way of seeing and thinking,* by drawing upon the words of writers and practitioners within the systems thinking community.³⁸

³⁶ (1990, p.68).

^{37 (}in Sterling 2003 p.28)

Every call for change begins with an expression of dissatisfaction with present conditions. There is a tension, a pain, a problem or even – as I have been exploring above – a crisis which demands immediate attention. Most environmentalists I know or have read, describe a moment in which they first became aware of the extent of the destructive forces that humans have unleashed in the world, followed by an overwhelming sense of urgency. Many mention a particular book or film that catalysed their concern. Histories of the environmental movement often points to Rachel Carson's (1962) book *silent spring*, as a pivotal moment. For me, reading it as a young man, it spoke powerfully to the dangerous dilemma we are in as a technologically proficient culture. In the very first chapter 'a fable for tomorrow' she writes of a rural town where spring arrives without a single note of bird song:

In the gutters under the eaves and between the shingles of the roofs, a white granular powder still showed a few patches; some weeks before it had fallen like snow upon the roofs and the lawns, the fields and streams. No witchcraft, no enemy action had silenced the rebirth of new life in this stricken world. The people had done it themselves. (p.10)

In my attempt to understand the calls for changes in thinking, it seems to me that the primary reason, driver or need expressed by proponents of systems thinking is the paradox of unintended consequences.

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The word 'system' derives from the Greek synhistanai, which means 'to place together.'

My personal introduction to the term 'systems thinking' was from reading Donnella Meadows' (2008) 'thinking in systems' in which she defines a system as 'an interconnected set of elements that is coherently organized in a way that achieves something... a system must consist of three kinds of things: *elements, interconnections,* and a *function* or *purpose*." (p.11). Soon after I found the work of physicist Fritjof Capra (2002; 1997; 2014) who defines a system as

'An integrated whole whose properties cannot be reduced to smaller parts, because they arise from the interaction of the parts. These properties are destroyed when the system is taken apart analytically or physically'. (2014, p.10)

³⁸ I use this term quite broadly. See (Ramage and Shipp 2009) for a very good introductory review of the history and development of the field of systems thinking, as well as important distinctions between people and schools of thought within it.

What attracted me to systems thinking was the promise of providing a way of perceiving the world that would allow us as a culture to avoid bringing upon ourselves the kinds of problems and catastrophes that Carson describes. By looking at the interconnections, relationships and purposes – as well as the elements – of the systems we inhabit, envision and create, perhaps one day we could bring about a world in which both people and nature would thrive and prosper.

A new way of looking

The world is a complex, interconnected, finite, ecological-social-psychological-economic system. We treat it as if it were not, as if it were divisible, separable, simple, and infinite. Our persistent, intractable, global problems arise directly from this mismatch. No one wants or works to generate hunger, poverty, pollution, or the elimination of species... but some problems consistently resist solution in many cultures and over long periods of time. Those are the problems for which a new way of looking is required. - Donella Meadows³⁹

In the above quote, Donella Meadows echoes this need for a 'new way of looking' that the three introductory quotes touched upon in different ways. Thus, an important feature of 'systemic thinking' would be to begin from the assumption that the *things* or *objects* that we ordinarily perceive as separate and distinct are fundamentally interconnected at a deeper level. As John Muir is supposed to have said, it seems that whenever we try to pick out anything by itself, we find it hitched to everything else in the universe. The unintended consequences that we experience all around us emerge because of a deeply rooted tension between a *relational ontology* and a *reductionist analytical epistemology* – fragmented thinking in an interdependent world. Mechanistic science has mistaken a practical way of gaining understanding of the world, with an accurate description – it has mistaken an *epistemology* for an *ontology*.

This epistemological error, as Bateson (1972) points out, is troublesome because our belief in the separateness of the world tends *to make it so*, writing: "*I believe that massive aggregation of threats to man and his ecological systems arises out of errors in our habits of thought at deep and partly unconscious levels*.". (p. 463) Or as physicist David Bohm (1980) points out: "it is not an accident that our fragmentary form of thought is leading to such a wide range of crises, social, political, economic, psychological, etc. in the individual and in society as a whole. Such a mode of thought implies unending development of chaotic and meaningless conflict." (p. 16)

³⁹ Meadows (1982) 'Whole Earth Models and Systems' in The CoEvolution Quarterly, Summer

Thus, at the root of a systemic way of seeing the world must be a change in metaphor or image. More than anything else, the Cartesian-Newtonian worldview is fundamentally based on the image of the world as *'mechanism'* – a great watch with gears turning according to eternal mathematical laws. Descartes (1637/1968) imagined God creating particles of matter in space, which he then "agitated diversely and confusedly... and afterwards did no more than to lend his usual preserving action to nature, and to let her act according to his established laws" (p. 62).

An ecological paradigm could be based on the root image of a '*living system*' (Korten, Capra 1996; 2014). Rather than the perceiving the universe as a great mechanism, we might recover the root image of the great 'tree of life' following Thomas Berry's reminder that "the tree symbol gives expression to the organic unity of the universe but especially of the earth in it's integral reality. Obviously, any damage done to the tree will be experienced through the entire organism."(p.17)

The whole is more than the sum of its parts. - Aristotle

Another way to understand the meaning of *thinking systemically* is to examine some of its fundamental concepts. In this context, fundamental concepts should be understood as principles that are fundamental, in the sense that they constitute a foundation for other essential ideas and concepts. The most recent and comprehensive attempt to present such fundamental concepts of systems thinking in a coherent way is probably Fritjof Capra and Pierre Luigi Luisi's (2014) "The systems view of life". The following is my abbreviation of their description of the characteristics of systems thinking. It is structured as a list of dichotomies, a shift in perspective from one 'way of thinking' to another.

Systems thinking means a shift of perception from material objects and structures to the nonmaterial processes and patterns of organization that represent the very essence of life. We should also add that the emphasis on relationships, qualities, and processes does not mean that objects, quantities, and structures are no longer important. When we talk of shifts of perspective, we do not imply that systems thinking completely eliminates one perspective in favour of the other (Capra & Luisi 2014, p.80)

Characteristics of systems thinking (Source: Capra & Luisi 2014, p.80-82)

Shift of perspective from the parts to the whole. Living systems are integrated wholes whose properties cannot be reduced to those of smaller parts. Their essential properties are properties of the whole, which none of the parts have. Systemic properties are destroyed when a system is dissected, either physically or conceptually, into isolated elements.

Inherent multidisciplinary. The systems view of life teaches us that all living systems share a set of common properties and principles of organization, and thus it is inherently multidisciplinary.

From objects to relationships. Throughout the living world we find systems nesting within larger systems. At each level the living system is an integrated whole with smaller components, while at the same time being a part of a larger whole.

From measuring to mapping. Relationships cannot be measured and weighed; relationships need to be mapped... When we map relationships, we find certain configurations that occur repeatedly. This is what we call a pattern. Networks, cycles, and boundaries are examples of patterns of organization that are characteristic of living systems.

From quantities to qualities. Mapping relationships and studying patterns is not a quantitative but a qualitative approach. Thus, systems thinking implies a shift from quantities to qualities.

From structures to processes. Every structure is seen as the manifestation of underlying processes... There is a continual flow of matter through a living system, while its form is maintained; there is growth and decay, regeneration and development.

From objective to epistemic science. Rather than understanding scientific descriptions as objective – that is, independent of the human observer and the process of knowing – Systems science implies that epistemology – the understanding of the process of knowing – has to be included explicitly in the description of natural phenomena. To quote Heisenberg (1958, p. 58): "What we observe is not nature itself, but nature exposed to our method of questioning."

From Cartesian certainty to approximate knowledge. All scientific concepts and theories are limited and approximate. Science can never provide any complete and definitive understanding. In science, to put it bluntly, we never deal with truth, in the sense of a precise correspondence between our descriptions and the described phenomena. We always deal with limited and approximate knowledge.

Aspects and kinds of systemic thinking

Systems scientist Peter Senge (1990) became well known for popularising the term systems thinking, within the field of organizational development. In 'the fifth discipline' he summarises – in a very similar wording to Capra and Luisi (2014) – that systems thinking can be understood as comprising three aspects. He describes systems thinking as:

A framework for seeing interrelationships rather than things, for seeing patterns of change rather than static "snapshots". It is a set of general principles distilled over the course of the twentieth century... It is also a set of specific tools and techniques...And systems thinking is a sensibility - for the subtle interconnectedness that gives living systems their unique character." (Senge 1990, p.68-69)

Following Senges definition, Sterling (2003 p.101) identifies three aspects of systems thinking; personal, practical and propositional knowledge. The personal knowledge aspect has to do with perception, awareness, intuition and values, or what Senge calls *sensibility*. Propositional knowledge relates to theoretical constructs and concepts, or what Senge calls *general principles*. Practical knowledge is concerned with methodology, skills and what Senge calls *tools and techniques*.

Personal knowledge



Figure 5 - Three aspects of systems thinking.

By considering the calls for and attempts to define systems thinking above, we begin to see how such a way of thinking and being in the world could also be termed *'relational'*. Because the essential quality of systems thinking is relationship, it offers us an opportunity to explore what Bateson calls "the pattern that connects" (1980 p.7). It draws our attention to questions such as what connects me to my family, community, economy, society and ecology – what connects elements within a system to each other, and to other systems nearby – and even questions such as what connects all of life to itself.

However, it is also with this question of relationship that we encounter the very different understandings of systems thinking, and are able to distinguish them from each other. Sterling (2003 p.13) notes an important difference between an ontological and epistemological view of systems. The ontological view acknowledges that there are '*systems out there*', which we can understand and

⁽Source: Sterling 2003, p.102)

appreciate by modelling and mapping the intricate relationships between. These methodologies are sometimes called 'hard systems', and have proved to be tremendously useful when trying to solve a complex technical problem. The epistemological view – which is the one I have described and advocated in the previous – rather than seeing systems as real 'things existing out there', perceives the term system as a useful metaphor, in essence a social construction, that can never be known or proven to exist independently of the observer. Thus, in the epistemological view '*systemicity lies in the perception of the observer*' (Ibid.), and According to Sterling 'An endemic problem in the systems movement is the frequent lack of conscious distinction between these two views of 'system' (Ibid.)

Where the ontological view of systems have tended to emphasise the propositional aspect of systems thinking – i.e. developing theoretical constructs and mathematical models of the behaviour of technological and biological systems – the epistemological view has been primarily preoccupied with the personal, developing what we might call *'systemic sensibilities'* – i.e. dialogical ways of collective meaning- and sense making in complex systems.

In the action research part of this thesis, I have drawn heavily on the writings of 'systemic' or 'relational' practitioners who have explored the implications of an epistemological view of systems. (Gergen, Reason, Shotter, Shaw) It is in these approaches to 'relational thinking' that we begin to see the connections between systems thinking and transformative learning as discussed previously. Peter Reason (1995) argues that transformative learning 'implies an experience of self much more fully in transaction with others and with the environment, a participatory self or participatory mind' (p.3).

John Shotter (2006) explores the implications of a relational epistemology for empirical research stating that we need:

A different form of engaged, responsive thinking, acting, and talking, that allows us to affect the flow of processes from within our living involvement with them. Crucially, this kind of responsive understanding only becomes available to us in our relations with living forms when we enter into dialogically structured relations with them. It remains utterly unavailable to us as external observers. I will call this kind of thinking, 'thinking-from-within' or 'withness-thinking', to contrast it with the 'aboutness-thinking' that is more familiar to us. (p.585)

The need for developing more participative thinking and being is echoed by many others (Berman 1981; Goodwin 1999; Heron 1996) and is explored further in theory (3.3) and practice (4) elsewhere in this this thesis.

There is a lot more to be said about the developments and distinctions of systems thinking, let alone its relationship with an emerging ecological paradigm. I have found the work of Ramage & Shipp (2009), as well as Stephen Sterling (2003) very helpful in exploring and clarifying such questions. Sterling sums up their possible relationship, stating that:

Ecological thinking is a form of systemic thinking that often largely ignores systems as discipline; while systems as discipline often ignores ecology in the broad sense... [and thus] systems thinking is necessary but not sufficient to realising an ecological worldview. (p.105)

To summarise, our fragmented worldview has brought into being the fragmentation of our world – experienced as ecological, social and economic crises – in a vicious cycle of self-reinforcing feedback loops. Our belief in the fundamental separateness of our minds from our bodies, and our selves from the world is the underlying "epistemological error" (Bateson 1972, 461).

Actions taken within such a fragmented and mechanistic epistemology will be unable to cope with the complexities of the sustainability challenge. Because the systems of which we are apart exhibit systemic properties such as self-organization, emergence, nonlinearity, non-determination and limited predictability, trying to solve problems within such living systems with a mechanistic and analytical mindset is doomed to fail. Rather, the kind of thinking needed has to be responsive and adaptive to the ever-evolving context and circumstances – it has to be a continuous epistemic learning process, a conversation between subjects.

Sustainable systems - definitions and visions

Without first defining a future "landing place" on the systems level, reaching sustainability is an unlikely outcome of any effort. – Karl Henrik Robért⁴⁰

The concept of sustainability is arguably the most significant idea in the 21st century. Thus unsurprisingly, it has also been the subject of endless discussions and ideological struggles, often

⁴⁰ (2002: p.201)

generating more confusion than clarity. It is perceived as a universal good – so far I haven't encountered anyone arguing against sustainability – however, a closer examination of the meaning of the term reveals very different and even mutually exclusive definitions. For these reasons, I feel it is appropriate to briefly review and present the underlying assumptions in the way the term is used throughout this thesis.

Lester Brown (1981), the founder of the Worldwatch Institute, introduced the concept of sustainability in his book 'Building a sustainable society'. In the late eighties the World Commission on Environment and Development published their Brundtland Report (1987), whose definition of 'sustainable development' is arguably the most widespread:

"Humankind has the ability to achieve sustainable development – to meet the needs of the present without compromising the ability of future generations to meet their own needs."

The Brundtland definition points to the way our scientific understanding have created a situation where it is now technologically within our power to undermine the 'ability for future generations to meet their own needs'. For most of human history, sustaining the environment was arguably perceived as natures – or perhaps one or more divine beings' – own business. Our technological proficiency has tipped this balance, such that human beings are the major driver of change to the Earth System (Rockström et al. 2009), moving natural scientists to propose the term 'The Anthropocene' to describe the geological era in which we live. (Zalasiewicz et al. 2011)

The term 'sustainable development' embodies a tension that has stayed with it since its inception. Sustainability implies durability, continuality and perseverance, while development implies change, growth and impermanence. Dale Jamieson (1998) points out how these internal contradictions of terms have played out as:

"those who were most concerned with poverty could emphasize the word 'development'... environmentalists could just as well emphasize the word sustainable. The balance between fruitful ambiguity and outright contradiction is a delicate one and ultimately sustainable development could not bear the weight of competing interpretations" (p. 184)

Jamieson then proposes that the result of this breakdown, can be understood by making a distinction between two definitions: strong and weak sustainability. Strong sustainability holds that

what is referred to as '*natural capital*' is maintained or preserved for its inherent values. Meanwhile, weak sustainability takes the anthropocentric view that human wellbeing should not be reduced over time. Using such a definition, some economists have argued that the reduction of the biodiversity of life and the amount of '*natural capital*', can and should be reduced if it increases the amount of '*artificial capital*' and increases production of goods and services for human consumption. Within this view there is an implicit assumption that eventually most if not all of the scarcity and limits imposed by nature be overcome (Costanza 1989: 3), by replacing the dependence on ecosystems with artificial capital through technological innovation and human ingenuity.

While the Brundtland definition has merit as a kind of moral and ethical reminder – in that it brought into attention our indebtedness to previous generations for our present wealth, and our responsibility to our children for their continued wellbeing – they are not very instructive in terms of how to create sustainable societies. Fritjof Capra (2014 p.352) suggests that this is the reason for the many discussions and confusion about the term within the environmental movement.

"The key to an operational definition of ecological sustainability is the realization that we do not need to invent sustainable human communities from scratch but can model them after nature's ecosystems, which *are* sustainable communities of plants, animals, and microorganisms. Since the outstanding characteristic of the "Earth Household" is its inherent ability to sustain life, a sustainable human community is designed in such a manner that its ways of life, businesses, economy, physical structures, and technologies *do not interfere with nature's inherent ability to sustain life*... sustainability does not mean that things do not change. It is a dynamic process of coevolution rather than a static state." (Capra 2014 p. 353)

Economics of the earth - the thermodynamics of wealth

"With the exception of inconsequential bits of material arriving from space, there is only so much water, so much land, and so much atmosphere to our planet. We have finite supplies of soils, minerals, and fossil fuels. It appears that we live on a finite planet." - Daly⁴¹

The most significant distinction is in terms of the perception of the relationship between economy and ecology. In conventional or neoclassical economics, nature is primarily considered nature as an

⁴¹ (2004: 62)

endless source of raw materials. The ecological economist Herman Daly expressed the ecological conception of sustainability in the following way: "the economic system is a subsystem of the global ecosystem, and one of the major goals of ecological economics is to determine when the benefits of continued growth in the economic subsystem are outweighed by the increasing opportunity costs of encroaching on the sustaining ecosystem. Achieving this goal demands a clear understanding of how the global ecosystem sustains the economy and how economic growth affects the sustaining ecosystem." (Daly2004, p.61)

In this paragraph Daly sheds light on the fundamental issue; the role and purpose of growth. Ecological economists stresses the importance of maintaining a distinction between the terms 'sustainable development' and 'economic growth' saying that they are not calling 'for an end to economic development, merely to physical growth, while mainstream economists' definitions of economic progress confusingly conflate the two." (Daly 2004, p.64)

Thus, the purpose of applying ecological thinking to economics is to understand how to meet human needs within the limits of the ecosphere. Since the publication of '*Limits*' (Meadows 1972), it has been understood that growth is not necessarily the universal good – the miraculous solution to all our ills – it was previously perceived to be. It has in fact proved to be the root cause of climate change, economic instability, global inequality and the overarching ecological crisis.

Rather than seeking economic growth, ecological economists propose a 'steady state economy' (Daly 2004) which guiding principle is to

"Maintain constant stocks of wealth and people at levels that are sufficient for a long and good life. The throughput by which these stocks are maintained should be low rather than high, and always within the regenerative and absorptive capacities of the ecosystem. The system is therefore sustainable—it can continue for a long time." (p.55)

Ecological economics' most significant contribution to the understanding of sustainability is it's basis in in the natural sciences, with it's understanding of the laws of physics and our economic and social dependence on healthy functioning ecosystems. All economic activity requires the input of matter and energy. The first law of thermodynamics tells us that nothing can be created out of nothing. Matter and energy cannot be created or destroyed, only change shape. The second law says that all energy moves in the direction of entropy. Since it requires energy to work, the second law means that over time energy becomes less available to perform work. Perhaps the single most influential progenitor of ecological economics, the physicist Nicholas Georgescu-Roegen expressed

it thus: 'all kinds of energy are gradually transformed into heat, and heat becomes so dissipated in the end that mankind can no longer use it.'⁴² (p.6)

The finite amount of matter on the earth sets and absolute limit to the possible size of the global economy. While we can replace one source of energy or materials with another – such as replacing fossil fuels with renewable energy sources such as wind, wave and solar – we can't make anything out of nothing. It is important to consider that windmills and solar panels are also made of matter, will eventually deteriorate, and are just as much subject to entropy as fossil fuels. It follows from the fundamental laws of thermodynamics that an infinitely growing economy is physically impossible. This apparently self-evident fact has important implications for the principles involved in creating a sustainable society.

The global ecosphere is for all practical purposes a *closed system* defined as a system that *"imports and exports energy only; matter circulates within the system but does not flow through it."* (Daly 2014, p.15)

From a strictly anthropocentric point of view, the planetary materials, energy and information can be subdivided into three categories or 'stocks' (Meadows 2004 p.53): The planetary sources of raw materials for production, the economic subsystem and the planetary sinks for our wastes and pollution (see figure 6)

In this way, the continuation of economic activity on the planet is dependent on continuous flows of low entropy matter and solar energy flowing into our economic subsystem as well as high entropy matter and energy flowing out in the form of waste and heat



Figure 6 - Economy and Ecology (Source: Meadows 2004: p.53)

loss. In order for the suns energy to be directly useful to us, it has to be transformed into a more

⁴² Georgescu-Roegen, N. (1975, p.6) Energy and Economic Myths: Institutional and Analytic Economic Essays, New York: Pergamon Press

accessible form. At present, almost all of this transformation happens through the natural process of photosynthesis in living organisms. (Daly 2014 p.62)

There is nothing novel in the idea that pursuing growth forever is not desirable (Mill 1900, Keynes 1931). Growth should be considered as a temporary phase, until the global population has achieved satisfactory material welfare. In his essay '*the coming economy of spaceship earth*', Kenneth Boulding (1966) foresaw the emergence of the now urgent transition from what he dubbed the '*comboy economy*' to a '*spaceman economy*':

In the cowboy economy, consumption is regarded as a good thing and production likewise; and the success of the economy is measured by the amount of the throughput

from the "factors of production," a part of which, at any rate, is extracted from the reservoirs of raw materials and noneconomic objects, and another part of which is output into the reservoirs of pollution...

By contrast, in the spaceman economy, throughput is by no means a desideratum, and is indeed to be regarded as something to be minimized rather than maximized. The essential measure of the success of the economy is not production and consumption at all, but the nature, extent, quality, and complexity of the total capital stock, including in this the state of the human bodies and minds included in the system. In the spaceman economy, what we are primarily concerned with is stock maintenance... This idea that both production and consumption are bad things rather than good things is very strange to economists, who have been obsessed with the income-flow concepts to the exclusion, almost, of capital-stock concepts.

Sadly, looking at the growth oriented economic policies pursued in most nations today, it seems Bouldings observation from half a century ago still holds true.

To restate, the earth is a materially closed system, that sustains life through the continuous flow of sunlight, transformed to complex organic structures through photosynthesis in living organisms. The economy on the other hand is an open subsystem of the greater 'economy of life', that is completely dependent for its sustainability on the continuous steady flows of matter and energy through its permeable membrane. Our future quality of life will be determined by our ability to intelligently learn from and mimic natures way of sustaining life, without depleting it's sources of

matter and energy or creating streams of waste that cannot be broken down or recycled somewhere else, later on.

When we build, let us think that we built forever. Let it not be for present delight, nor for present use alone, let it be such work, as our descendants will thank us for. And let us think, as we lay stone on stone, that time is to come when those stones will be held sacred, because our hands have touched them, and that people will say as they look upon the labour and wrought substance of them: see, this our ancestors did for us." - John Ruskin⁴³

⁴³ (Reprinted 1961)

Ecological Literacy

We're never going to have respectful and reverential relationships with the planet- and sensible policies about what we put in the air, the soil, the water - if very young children don't begin learning about these things literally in their houses, backyards, streets and schools. We need to have human beings who are oriented that way from their earliest memories. - Elise Boulding

In recent years, thinkers and practitioners in sustainability education have been using the term ecoliteracy (Orr 1992, Stone & Barlow 2005, Goleman 2012, Capra 2014) to describe the knowledge and skills necessary to design communities in such a way that their activities do not interfere with 'nature's inherent ability to sustain life'. In the words of Capra and Luisi (2014) 'being ecoliterate means understanding the basic principles of ecology, or principles of sustainability, and living accordingly.' (p. 353)

According to Capra and Luisi the systemic understanding of life that I have reviewed in the previous sections provides a conceptual framework for establishing connections between ecological and human communities:

Both are living systems exhibiting common principles of organization. They are networks that are operationally closed but open to continual flows of energy and resources; they are self-organizing, operate far from equilibrium, and evolve by means of their inherent creativity, resulting in the emergence of new structures and new forms of order. During more than 3 billion years of evolution, the planet's ecosystems have organized themselves in subtle and complex ways so as to maximize their sustainability. This wisdom of nature is the essence of ecoliteracy." (Ibid.)

Capra and Luisi suggest that we can rely on basic principles of ecology as guidelines for how to build sustainable human communities. They admit that there are also some properties of human communities, which are not present in ecosystems (such as self-awareness, language, consciousness, culture, justice, democracy, greed and dishonesty) (ibid.).

On the following page I have summarized and abbreviated their list of suggestions of the principles of ecology that we should study and learn from in our endeavours to create sustainable societies.

Principles of Ecology

(Abbreviated from Capra & Luisi p.353-356)

Interdependence. All members of an ecological community are interconnected in a vast and intricate network of relationships, the web of life... the mutual dependence of all life processes on one another – is the nature of all ecological relationships.

The cyclical nature of ecological processes. The ecosystem's feedback loops are the pathways along which nutrients are continually recycled... The lesson for human communities here is obvious... Sustainable patterns of production and consumption need to be cyclical, imitating the cyclical processes in nature.

Solar energy, transformed into chemical energy by the photosynthesis of green plants, is the primary source of energy driving the ecological cycles... sunlight for solar heating and photovoltaic electricity, wind and hydropower, biomass, etc. – is the only kind of energy that is renewable, economically efficient, and environmentally benign.

Partnership. The cyclical exchanges of energy and resources in an ecosystem are sustained by pervasive cooperation. Indeed, ever since the creation of the first nucleated cells over 2 billion years ago, life on Earth has proceeded through ever more intricate arrangements of cooperation and coevolution. In the memorable words of Margulis and Sagan (1986, p. 15): "Life did not take over the globe by combat, but by networking."

Flexibility of an ecosystem is a consequence of its multiple feedback loops, which tend to bring the system back into balance whenever there is a deviation from the norm due to changing environmental conditions. The web of life is a flexible, ever-fluctuating network. The more variables are kept fluctuating, the more dynamic is the system, the greater is its flexibility, and the greater is its ability to adapt to changing conditions... Loss of flexibility always means loss of health... All ecological fluctuations take place between tolerance limits. There is always the danger that the whole system will collapse when a fluctuation goes beyond those limits and the system can no longer compensate for it...

Diversity of an ecosystem is closely connected to the system's network structure. A diverse ecosystem will be resilient, because it contains many species with overlapping ecological functions that can partially replace one another... the more complex the network is, the richer is its pattern of interconnections, and the more **resilient** it will be; and since the complexity of the network is a consequence of its biodiversity, a diverse ecological community is resilient..."

The purpose of ecological literacy is to raise the awareness of such fundamental principles of living systems and appreciating the basic patterns of organization that has allowed nature to evolve and sustain life for several billion years,

2.3 Meditation and Mindfulness - practicing relational being

'I think it is the good teachers who will be able to change the world. That's my belief, because a teacher can nourish, can heal, can build healthy, happy human beings. Teachers have to practice mindfulness and they have to master the practice before they can offer it to their students" - Thich Nhat Hanh

The last piece I want to add to this already rather extensive patchwork of ideas is mindfulness. In the previous parts of this chapter I described the need for *transformative* or *epistemic* learning, understood as changes from a mechanistic and reductionist paradigm, to an ecological, systemic, and relational *way of seeing, knowing, and being.* I have also explored the content or curriculum that such a deeper kind of sustainability education could consist of. In this last part of the chapter, I want to briefly touch on some pedagogical considerations concerning education in a relational key, specifically concerning the practice of contemplation and mindfulness.

Breathe, you are alive

Mindfulness is a word that has moved from relative obscurity into everyday consciousness over the past decades. Countless books, courses, and research projects promote and study it.



In Buddhism – from where the term originates and has been passed on from one generation to the next for

more than two and a half millennium years –Right Mindfulness (*samyak smriti*) is the seventh element of the noble eightfold path leading to enlightenment (Nhat Hanh 1998). In this tradition, mindfulness is seen as a remedy to greed, hatred and delusion – a path of liberation from suffering. The heart of the Buddha's teaching is to help relieve the suffering caused by our habitual and conditioned patterns of thought and action.

Right Mindfulness accepts everything without judging or reacting. It is inclusive and loving. The practice is to find ways to sustain appropriate attention throughout the day. The Sanskrit word for mindfulness, *smriti*, means "remember". Mindfulness is remembering to come back to the present moment. - Thich Nhat Hanh (1998 p.64)

The popularization and secularisation of mindfulness in the west is often credited to Jon Kabbat-Zinn (1996), professor of medicine at the Medical Centre at the University of Massachusetts, who studied with Vietnamese Zen master Thich Nhat Hanh among others and has used his understanding to develop the field of "mindfulness-based stress reduction". According to Kabat-Zinn mindfulness refers to the ability to direct awareness to experience as it unfolds, moment by moment, with open-minded curiosity and acceptance. The term 'coming to our senses' (Kabat-Zinn 2006) is also used to describe the conscious ability to bring awareness to our present experience and respond skilfully and appropriately to the situation at hand. In contrast, mindlessness is a state of moving through life as a sleepwalker, not living in the present, but agonizing over the past or worrying about the future. Living in a state of mindlessness can result in great amounts of stress and anxiety, as we are never fully present and our experiences constantly falls short of our expectations.

There is a story in Zen circles about a man and a horse. The horse is galloping quickly, and it appears that the man on the horse is going somewhere important. Another man standing alongside the road shouts, "Where are you going?" and the first man replies, "I don't know! Ask the horse! - Thich Nhat Hanh (1998 p.24)

Form follows attention or consciousness. We can change reality by changing the inner state from which we act. If we simply go along with our habitual patterns of thought and action inherited from past generations – like the man being pulled along by the powerful horse – the future will look much like the past, full of conflict and fragmentation. Responding to experience from an inner state of confusion, sadness or suffering tends to lead to actions characterized by impulsiveness and reactivity. Mindfulness is attending to the inner movements of actions, feelings and thought, becoming aware of impulses or 'mental formations' as they manifest in our mind and body.

As I wrote in the introduction, the difference between a world that is sustainable and thriving, rather than in social and ecological collapse is learning. Now, we might restate this, in light of mindfulness: the difference between a desirable and undesirable future is whether we are able to become mindful of, and transform, our habitual patterns of thoughts. This is the purpose of mindfulness. For these reasons I suggest that mindfulness – and similar contemplative approaches to calming the mind and becoming aware – might be the missing piece in sustainability education.

Since the introduction by Kabat-Zinn (1996) of mindfulness into western medicine – through an eight week training programme beginning in the 1970's – countless scientific studies have shown significant relief for people suffering from pain and distress in relation to difficult health conditions

(Baer 2006), and there is evidence of it's useful application in many other areas, such as prisons (Samuelson 2007), parenting (Singh 2007), workplaces and education. (Langer 1997; Weare 2013; Nhat Hanh 2011; Brown 2015)

The deadening of our response

What is the pain we feel – and desperately try not to feel – in this planet time? It is pain for the world... These deep responses arise by virtue of our connectivity with all life. To be conscious in our world today is to be aware of vast suffering and unprecedented peril - Joanna Macy (2014 p.14-15)

The relevance of mindfulness within the context of sustainability education is a less charted territory. Thich Nhat Hanh (2011) – through whom I first became aware of important synergies – makes the relationship very explicit and has hosted several retreats, gatherings and conferences with the purpose of supporting and nourishing educators in their efforts to create more joyful and sustainable world:

Our children learn reading, writing, math, science, and other subjects in school that can help them earn a living. But very few school programs teach young people how to live –

how to deal with anger, how to reconcile conflicts, how to breathe, smile and transform internal formations. There needs to be a revolution in education. We must encourage schools to train our students in the art of living in peace and harmony. (1998 p.150)

Also, The Mind Life Institute (2010)⁴⁴ – founded in 1987 with the mission to *'alleviate suffering and promote flourishing by integrating science with contemplative practice and wisdom traditions'* – organized a conference in 2009 on the theme of 'Educating world citizens: Educators, scientists and contemplatives dialogue on cultivating a healthy mind, brain and heart' (Ibid). Here, they explored questions such as:

How can our educational system evolve to meet the challenges of the 21st century? How will we educate people to be compassionate, competent, ethical, and engaged citizens in an increasingly complex and interconnected world?

There is evidence (Weare 2013) that mindfulness used in education can increase students' positive emotions, while reducing negative emotions, depression and stress. It has been found to increase our ability to learn, remember, stay focused, retain attention, regulate emotions and feel more self-

⁴⁴ Interestingly, neuroscientist Francisco Varela co-founded the Mind Life Institutes along with Tenzin Gyatso, the 14th Dalai Lama and Adam Engle. Through his collaborations with Humberto Maturana (1992,), on the idea of 'Autopoiesis' Varela arguably became one of the most significant contributors to the emergence of the 'systems view of life'. In founding the Institute, they were convinced that "whereas science relies on empiricism, technology, "objective" observation, and analysis... well-refined contemplative practices and introspective methods could, and should, be used as equal instruments of investigation" (Mind Life Institute)

esteem, empathy, altruism and compassion. Thus, we begin to see it's possible contribution to a *relational* education, with the aspiration of healing the relationship between our mind and body, our self and community and our society and the natural world.

In their suitably entitled book 'Active Hope – how to face the mess we're in without going crazy' medical doctor Chris Johnstone and eco-philosopher Joanna Macy (2012) claims that the greatest danger to our survival as a species, is 'the deadening of our hearts and minds⁴⁵. They describe a social psychological experiment where a group of people are asked to wait in a room and fill out questionnaires:

A steady stream of smokelike vapour started pouring in through a vent in the wall and filling the room. If individuals were in the room alone, they responded quickly, leaving the room and looking for help. But when several people sat in the room together, they looked to see how others responded. If they saw others remaining calm and continuing to fill in their questionnaires, they were more likely to do so too... this experiment serves as a metaphor for our responses to planetary emergency... if we are to survive as a species, we need to understand how our active responses to danger get blocked and also how we can prevent this from happening" (p.59-60)

This psychological phenomenon that is aptly known as 'bystander apathy', (Darley & Latané 1968), is caused by ambiguity, group cohesion and diffusion of responsibility. Could this be the single most significant political challenge of the 21st century?

Joanna Macy's (1991; 2012) doctoral research – into the converging ideas of Buddhism, general systems theory, and deep ecology – revealed how the meaning we give to our emotional responses are key to addressing the challenge of apathy:

Pain for the world... outrage, alarm, grief, guilt, dread, and despair, is a normal, healthy response to a world in trauma... In Buddhism... open alertness that allows our heart to be stirred by the suffering of others is appreciated as a strength... this ability is evidence of our interconnectedness with all life (p.67)

It is by responding appropriately to pain and tension that living systems stay alive. By a process known as homeostasis, our bodies maintain themselves in a constant dynamic balance. When we

⁴⁵ What I described as 'no response' in the first part (2.1) of this chapter.

are cold, the blood flow to the skin is reduced to maintain heat, and we might begin shivering to increase our metabolism. When we feel too warm, we begin sweating and are cooled down as the sweat evaporates from our skin. Panting is another response, manifestly employed by dogs, who doesn't have sweat glands. However, these responses are all automatic, or what systems theory call *cybernetic*. When winter arrives, environmental conditions can exceed the limits of our *interior milieu*, and our bodies' self-regulation can no longer keep up. In such instances, in order to maintain balance and stay alive, we need to consciously become aware, and choose a path of action to alleviate the problem, such as wearing another layer of clothing.

Giving awareness to the pain and suffering of the world can be challenging. However it is necessary in order to generate the energy required for appropriate action. Macy (2012) continues:

When we touch into our depths, we find that the pit is not bottomless. When people are able to tell the truth about what they know, see, and feel is happening to their world, a transformation occurs. There is an increased determination to act and a renewed appetite for life (p.70)

Coming back to our senses, through mindful awareness is one such practice, that can transform suffering into healing.

Coming back to life - from bounded being to interbeing

Thich Nhat Hanh was asked, What do we most need to do to save our world? his answer was this: What we most need to do is to hear within ourselves the sounds of the Earth crying.⁴⁶

Kenneth Gergen (2009) writes of our tendency to perceive of our selves as separate individual autonomous entities. He uses the term *'bounded being'*, to describe this pervasive worldview: 'Is daily life not understood in just this way: me here, you there, a space between? For us it is a world of fundamental separation' (p.3)

Mindfulness invites us to become aware of and celebrate the myriad of ways in which we are interdependent with life – it is a journey from bounded being to relational self.

Thich Nhat Hanh brings into play the term '*interbeing*' to describe how Buddhism perceives reality. The Sanskrit word '*sunyata*' means 'emptiness of a separate self', and points to the observation that nothing can exist in isolation. What we perceive as our selves would not be possible if it weren't for

⁴⁶ (quoted in Macy 2014 p.106)

the generosity of the living earth and our ancestors – multitudes of 'non-self elements'. This dissertation would not be possible, without the trees in the paper, the people who made my computer, the countless people who supported me while working on it. It would not have been possible without you reading this. Thank you.

In a similar way, Gergen (2009) encourages us to

View what we take to be *knowledge as an outcome of relational processes*. Through co-action people generate a world of the real... I propose that the primary aim of education is to enhance the potentials for participating in relational processes – from the local to the global (p.204 & p.243)

From this relational standpoint the purpose and meaning of education changes. It is no longer about being moulded to fit with the requirements of industrial society. The purpose is not to produce effective individuals who can compete and struggle for material wealth (*dukkha* – or suffering in Sanskrit). Rather education in a relational key would mean learning to live satisfying, happy and meaningful lives and take good care of each other and our home.⁴⁷ Progress and growth would be redefined as knowing how to live well in our places.

This has implications for the social and economic changes explored in the previous section (2.2). Arne Naess (1995) reflects on the joy and satisfaction that can emerge from knowing that we are connected to everything around us:

As I sit down and breathe deeply and just feel where I am, I can ask myself where and when I really enjoy my life and what would be the minimum mean necessary to maintain these enjoyable feelings and situations... if you concentrate on what gives you satisfaction, you will find that it can be obtained much more easily and simply than we are educated to believe in our society, where the bigger, the more elaborate, and the more expensive are considered better.⁴⁸

Meditation and mindfulness can help us become aware of our interbeing. For example, the practice of mindful eating can help us appreciate the sources and environmental consequences of our consumption. Thich Nhat Hanh (1998) observes:

⁴⁷ Incidentally, the root meaning of Economics. Oikos - household and Nomos to manage or 'put into order')

⁴⁸ p.18 from "Simple in Means, Rich in Ends" in "Deep Ecology for the 21st Century."

We have to look deeply to see how we grow our food, so we can eat in ways that preserve our collective wellbeing, minimize our suffering and the suffering of other species, and allow the earth to continue to be a source of life for all of us. (p.32)

So, how does one become mindful? How does one practice relational being. Writing and talking about mindfulness can be difficult; it is a state of awareness that has to be experienced to be understood. It is a meta-cognitive quality of awareness, which precedes word and thought. Being mindful is a skill that one can cultivate in practice. Mindfulness can be learned in a community practicing simple meditation exercises – such as awareness of breathing, walking, sitting, eating, seeing, or hearing.

Buddhist meditation has two aspects: *shamatha* (stopping) and *vipashyana* (looking deeply) Thich Nhat Hanh (1998) explains it thus:

If we cannot stop we cannot have insight. Looking deeply you see the true nature of things... we need the energy of mindfulness to recognize and be present with our habit energy in order to stop this course of destruction... Mindfulness is the energy that allows us to recognize our habit energy and prevent it from dominating us... Stopping, calming and resting are preconditions for healing. (p.25-27)

By looking deeply into our thought process, we can see that our thoughts and emotions are not us, they have a fleeting impermanence, like the clouds in the sky.

There is a model of consciousness in Buddhism that I have found very helpful when trying to understand the significance of mindfulness to education. Buddhist psychology employs the image of a seed (*bija*). In the depth of what is called our store consciousness (*alayavijnana*), we have wholesome and unwholesome seeds, such as anger, delusion, fear and seeds of understanding, compassion and forgiveness. (Nhat Hanh 1998 p.206) These seeds originate from our deep history; passed on to us from our ancestors. When these seeds are watered, they become feelings and thoughts – 'mental formations' – in our mind-consciousness (*manovijnana*)

"Imagine a circle divided in two. Below is the store consciousness and above is mind consciousness. All mental formations lie deep down in our store consciousness. Every seed in our store consciousness can be touched and manifests itself on the upper level, namely our mind consciousness ... The practice is to refrain from watering the negative seeds in us... If it happens that a negative seed, the seed of an affliction, is watered and manifests itself, we do everything in our power to embrace it with our mindfulness and help it return to where it came from. The longer such seeds stay in our mind consciousness, the stronger they become... We also try to recognize the positive seeds that are in us and to live our daily lives in a way that we can touch them and help them manifest..."

(Thich Nhat Hanh 1998 p.206-207)

The significance of this model of consciousness is that it suggests a radically re-visioning of the role of the educator. Rather than assuming an *'information or knowledge deficiency'* on behalf of the student, it begins from the assumption that everyone has the seeds, the potential to live a meaningful and fulfilling life that contributes to the whole. The role of the educator is to bring out the dormant potential, to unfold what is implicit.

The founder of Schumacher College Satish Kumar (2016) compares the student herself with a seed:

"A tree is already in the seed, a gardener or an orchard keeper or a forester cannot teach the seed to become a tree. The work of forester is to provide the right soil and conditions so that seed is able to self-realise and become a tree. Similarly pupils and students have a potential to be who they are but their potential is implicit. The work of a school or a college and of the teacher is to provide the right inspiration, appropriate context and good conditions for the pupils and students to discover themselves and be self-realised into mature human beings." (p.1)

This is what is intended by my use of the term transformative learning. I am suggesting that what is required is the cultivation of an education for life that supports and nourishes the 'wholesome seeds' in the students and teachers, allowing each person to answer for themselves the question 'who am I?" and "what is my contribution to the whole?",

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4. Findings and Discussion

In the previous chapter I explored the works of a broad range of educators and scientists, in order to unearth the theoretical foundations of an *education for life*. I found that the theories and conceptual constructs I studied shared many similarites. In this chapter I will attempt a synthesis of the literature review – exploring the *patterns that connect* – and discuss the implications of what I have discovered.

4.1 Education for life - A Synthesis

"The universe is one: nature and mind and spirit and the heavens and time and the future all are part of the big ball of life. Instead of thinking that you have to put pieces together that will add up to the whole, I think you have to start with the premise that they're already together... The educative process must be organic, and not an assortment of unrelated methods and ideas... Education is what happens to the person not what comes out of the mouth of the educator" - Myles Horton⁴⁹

While reading my way through the literature on education, transformative learning, social psychology, systems thinking, sustainability, ecology, Buddhism and mindfulness I began to notice a common pattern of organization. Many of the authors would seemed in their approaches, theories and concepts to implicitly or explicitly refer to three distinct dimensions. Furthermore there seemed to be strong similarities in the nature of these distinctions, and the words chosen to describe them. I found this discovery so fascinating, that I decided to began drawing up visual representation, synthesising the dimensions into a single conceptual model (see figure 7). My intention throughout this research have been to acquire as holistic and inclusive an understanding as I could possibly achieve during the limited time available. Thus, I am delighted to have discovered the preliminary contours of a holistic model that could constitute the theoretical foundation for an *education for life*.

⁴⁹ (1998, p.130)



Figure 7 - Education for Life Lotus



The lotus model consists of three layers of petals representing the three dimensions or levels I found repeatedly throughout the literature studied. The words inside the petals are taken directly from the sources I am drawing upon, and thus each triad of consecutive petals represent one theory or concept. Since the lotus only has 24 petals, I have had to exclude some triads from the model. In the figure below I have included the sources and inspirations for each triad around the edges of the lotus – along with the ones that didn't make it into the final drawing economic reasons – in order to show explicitly the intellectual roots of the synthesis. I now want to briefly discuss the importance and implications of each dimensio

1st Dimension – Inner/Ethical/Epistemology

"Know Thyself" - Socrates

The inner dimension represents the need for cultivating self-awareness and self-knowledge. This dimension is important because it has to do with ethics, emotions, identity, motivation and incentive. In my research, I found that this level is the one most often overlooked in sustainability education, and yet it is arguably the most significant. By becoming aware and noticing the continuous flux of our thoughts and emotions we can generate the motivation and energy required to create a more sustainable world. Sustainability education has to engage with the learner's innate need for meaning and identity. This is what is implied by the term transformative learning. We need a kind of education that explores and encourages positive visions of the future, as well as learning how to deal with stress, fear and cynicism. Creating a sustainable society requires more than disseminating factual information about the state of the world. An important element of this dimension is the cultivation of psychological or personal resilience. In order to face the challenges of the 21st century, we will need people who can remain stable and solid in the midst of great difficulty ⁵⁰. For this reason I suggest that contemplative practices such as meditation and mindfulness might be the missing piece in sustainability education.

The stationary state would make fewer demands on our environmental resources, but much greater demands on our moral resources - Herman Daly⁵¹

2nd Dimension – Relational/Practical/Methodology

"All education proceeds by the participation of the individual in the social consciousness"- John Dewey⁵²

The relational dimension represents the need for cultivating practical and interpersonal skills. It has to do with learning to understand other people's perspective, and develop empathy and compassion. This is important in order to learn how to collaborate, cooperate, develop and maintain healthy relationships, and avoid social exclusion and alienation. An important part of this dimension has to do with the acquisition of skills and competence in how to live well and sustainably in our local place. This includes things such as how we provision food, water, shelter and energy, as well as how we live together in peace. In a world with declining natural resources, an ounce of practice in sustainable living is worth more than a ton of theory⁵³. We urgently need an

⁵⁰ Thich Nhat Hanh (1998, p.26)

⁵¹ Quoted in Meadows (2004 p.235)

⁵² (1897) In 'My pedagogic creed. The School Journal. LIV, 4, 77-80)

⁵³ (Paraphrasing E.F Schumacher (2011) Small is Beautiful A Study of Economics as if People Mattered. Vintage.)

education that teaches the practical skills needed to reverse the damage we have done to the web of life and renews and regenerates living systems across the earth.

"In a nutshell, nature sustains life by creating and nurturing communities. Sustainability is not an individual property but a property of an entire web of relationships. It always involves a whole community." - Capra and Luisi⁵⁴

3rd Dimension – Systemic/Conceptual/Ontology

"Why do our schools teach us nothing about the pattern which connects? Break the pattern which connects... and you necessarily destroy all quality." - Gregory Bateson

The systemic dimension represents the need for cultivating the understanding of *interbeing*. It has to do to with understanding the complexity of the world around us, and how the systems we are a part of interact to create webs of interdependence. In the previous chapter, I described how the fundamental tension between a mechanistic worldview in a complex relational world is creating the negative unintended consequences we see all around us. If we want to reverse the fragmentation, we need an education that is based on a holistic systems view of life, and sees the world as 'a communion of subjects rather than a collection of objects'⁵⁵. Such a relational ontology would allow the students to appreciate the fundamental interdependence of all life on earth, and bring about a life-sustaining society.

"We are caught in an inescapable network of mutuality, tied in a single garment of destiny. Whatever affects one directly, affects all indirectly." - Martin Luther King, Jr.

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⁵⁴ (2014 p. 355)

⁵⁵ In the poetic language of Thomas Berry (1992: p.243)

4.2 Conversations

"Dialogue is really aimed at going into the whole thought process and changing the way the thought process occurs collectively. We haven't really paid much attention to thought as a process. We have engaged in thoughts, but we have only paid attention to the content, not to the process." – David Bohm⁵⁶

One of my early insights in this project, was the importance of thought in the creation of our world. What we say is a reflection of our thoughts. In the previous chapter I have explored how our fragmented way of thinking have led us into in all kinds of environmental and social problems. Reading physicist David Bohm's (1996) work on dialogue strongly influenced my interest in exploring how the way we communicate come to influence our actions in the world we are making together. He imagined the process of dialogue as a 'stream of meaning flowing among or through us and between us' (p.6); Bohm suggested that dialogue offers a 'possibility for a transformation of the nature of consciousness' (Ibid.). Another important influence is the work of Patricia Shaw (2002), whom I have been privileged to study with this past year. In her work as an organizational consultant, she has explored how our talk – or *collective sense making* – continuously sustains and recreates the world we inhabit. I have come to appreciate her call for much more responsive, adaptive, emergent and improvisational modes of engaging in organisational change.

Inspired by these conversational approaches to knowledge creation, in order to deepen my understanding of sustainability education, I have sought out people with whom I could enter into conversation. What began as a minor research inquiry – driven by my curiosity – has grown into a vision of a much bigger project with a life of it's own. During the past year I have undertaken several field trips with the purpose of learning from people and communities I consider to be insightful and skilful in their practice of sustainability education. The project has grown beyond the scope⁵⁷ of this dissertation, and thus I decided simply to reference it here, for the reader to explore: https://conversations.jacobrask.dk

That being said, the conversations I have taken part of has influenced my thought, choices and actions throughout the past year, and have made their way into writing throughout this dissertation.

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⁵⁶ (1996, p.9)

⁵⁷ And number of words allowed!

4.3 An Action Experiment - Teaching Ecology at Vestjylland Højskole

The approach to adult education will be via the route of situations, not subjects. '- Eduard C. Lindeman⁵⁸

On Friday the 29th of April, I travelled to the west of Denmark, to teach at a folk-high-school neighbouring the North Sea by the name of 'Vestjyllands Højskole'.

I had three full days – strewn across two weeks – with the young folk-school students as a guest teacher on an elective entitled 'Ecology' (Vestjyllands Højskole 2016), that I am now co-designing and teaching with a friend of mine. It is a course that revolves around the practical aspects of sustainability, drawing on insights from the fields of ecology, systems thinking, permaculture, new economics and social entrepreneurship, with a strong emphasis on learning by doing and project-based learning. This particular course has been running for a few years, and I have been involved – in some way – for the past two. I have previously written my account and reflections on the first day of teaching as an essay (Rask 2016a). Thus this first part is omitted from the following in which I will relate and discuss the remaining part of the teaching experience.

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What is alive? meeting the students where they are

A person cannot teach another person directly; a person can only facilitate another's learning – Carl Rogers (1951)

As I entered the folk school classroom, I aspired to animate my student's ecological intelligence, and create a positive sense of being part of a learning community exploring together. I have often begun teaching sustainability by presenting a condensed image of what I perceive to be the greatest challenges facing humanity today. While I still wanted to do that, I decided to try and do it in a way where I would also get to know them, their values, perspectives – where they were coming from. You could say I am trying to begin the exploration from where they are, rather than where I am.

I began by showing a series of four images (figure 8)

^{58 (1926)} in The Meaning of Adult Education



Figure 8 - The four ecological challenges of our time: Climate change, Waste, Pollution, and Biodiversity

After some moments of silence I said that these images represent what is by many environmentalists perceived to be the four greatest ecological challenges of our time: Climate change, wasting of finite resources, pollution, and loss of biodiversity.

"I think these four problems have something in common. Do you? And if so, what?" I invited the students to talk about this question in pairs, and then sharing their thoughts with the whole group. Many interesting responses came out of this:

"They are all caused by us" and "They are caused by economic growth".

I went on:

"I agree.

One thing they have in common is that they are all caused and exacerbated by people. And yet, it also seems to me that no one is actively trying to create them.

How does this paradoxical situation come about?"

Then followed another round of conversations and sharing thoughts.

"One way to understand this is through lens of systems thinking.

These problems are systemic – meaning they are unintended consequences of our systems as a whole. In many ways they are the results of yesterdays solutions created by people who had the best intentions but limited understanding."

Beginning with this activity is a kind of 'problem-posing'. Ira Shor (1992) explains how:

"Problem posing has it's roots in the work of Dewey and Piaget, who urged active, inquiring education, through which students constructed meaning in successive phases and developed scientific habits of mind... In a Freirean model for critical learning, the teacher is often defined as the problem-poser who leads a critical dialogue in class, and problem posing is a synonym for the pedagogy itself (p.31).

While I wanted to share my own fascination with systems thinking, it was also important for me to begin by understanding where they were coming from. In a way, I wanted to invite the students into my own inquiry, throughout the past decade, with a fifteen-minute exercise. An interesting question emerging from this is how to create the space for a genuine exploration of the subject and avoid leading the students to a particular conclusion.

Talking about different 'roads to critical thought', Ira Shor makes a distinction between three kinds of themes (p.55): Generative, Topical and Academic. According to Shor a critical and democratic pedagogy needs to primarily concern itself with generative themes situated in issues and language from the everyday life of the students. These themes are generative because they are 'weighted with emotion and meaning, expressing the anxieties, fears, demands and dreams of the group'⁵⁹. Beginning the session this way, we began to identify some generative themes, while I had determined the frame.

Reflecting on this now, in writing, I can see some opportunities for improvements, some ways to move towards beginning more from the standpoint of the students. Next time I'm going to teach this kind of session, I think I will begin by asking what they see in the images, asking them to use in their own words and make their own interpretations, before offering mine. Another way to begin is to ask an even more open and general question about a time when someone had experienced the collective creation of an outcome that no one intended, and then allow time for the students to

^{59 (}Freire, quoted in Shor (1992, p.55)

share their stories with each other and the whole group. Through this experience I've realised the importance of really empowering the students to come up with and define their own questions and themes.

One way of encouraging the development of generative themes would be to ask the students to spend a few minutes writing on their own about questions such as the following:

In what ways do you experience fragmentation, things falling apart, 'a world that is crumbling, decaying and exhausting itself?'

In what ways do you experience 'something else, still indistinct, arising from the rubble? Where are the seeds of a new world waiting to be born?'

How does the ecological, social and economic crises present themselves in your personal experience of everyday life? Why are you concerned about this situation?

Reflecting on this experience now, it seems that the more time we have initially, for speaking our concerns, and listening to each other's stories, the more interesting and useful does the whole learning experience become. It is important to remember that 'what is being taught' is not identical with 'what is being learnt'⁶⁰. Beginning a teaching session by bringing out into light the students understandings, concerns, assumptions and mental models, offers an opportunity for feedback – in the sense that the teacher now at least has an opportunity to meet the student where they are. How can a teacher know what to say, if she does not know with whom she is talking? To meet the students where they are, I should remember to begin by exploring "*what is alive*?"...

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Stories of Hope and Wisdom

The friend of wisdom is also a friend of myth -Aristotle

Throughout the sessions we had I would sometimes use storytelling as way to introduce a theme and open up a conversation. I did this in two ways: telling stories of real cases or situations – such as the transition towns movement (Hopkins 2008) that I've studied over the past year – and using

⁶⁰ Knud Illeris (2015, p.19) points this out, explaining how we often confuse or conflate four different commonly used definitions of learning.

metaphorical stories and folktales from different parts of the world. Over the years I've become something of a collector of stories fables and folktales presenting more holistic ways of seeing the world. I've found that using such stories can be a good way of creating a common reference point for exploring a particular theme or idea.

I was speaking with the students about the idea of creating a more circular economy, when I was suddenly reminded of an early childhood experience that I'd long forgotten.

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When I was 6 years old, my father and I was in Ghana. Our house was set on the top of a hill overlooking the city. Most of the things we ate came in tin cans or plastic, so we quickly created a lot of waste we didn't quite know what to do with. Generally people just threw trash in the street, but coming from the tidy streets of Copenhagen, that didn't seem like the right thing to do. We decided to carry it down the hill and into town next morning, to find somewhere to get rid of it. To prevent the leftovers from smelling in the kitchen, my father put it in a bag outside the house overnight. Waking up the next morning I heard voices outside. As I stepped outside, the street was alive with activity. A group of local children had found the trash bag and emptied it into the street. One of them was pulling around a tiny car, handmade out of tin cans and pieces of wood. Another kid had built a small stand with different pieces of trash nicely arranged in a row, like a shopkeeper displaying his inventory. The smallest children stood lined up in front of it admiring the goods. While admiring their creativity, I suddenly saw that all of this had emerged from our trash, that by putting the bag of trash outside the house, we had thrown out a treasure trove of fun without even realising it. What I had thought of as waste, to these kids were precious toys.

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In a conversation with Paulo Freire on the educational ethics and pedagogy of the Highlander Folk School that he founded, educator Myles Horton (1990) talks about a man who was critical of his methods saying: "All you do is sit there and tell stories. Well, if he'd seen me in the spring planting my garden, he would've said: 'That guy doesn't know how to garden, how to grow vegetables. I didn't see any vegetables. All I saw was him putting a little seed in the ground'... Well he was doing the same thing about observing the workshop. It was the seeds getting ready to start, and he thought that was the whole process. To me, it's essential that you start where people are." (p. 99)

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We sat in a circle outside in the sun, as I told the story of how the small English town of Totnes became a transition town, and what I'd learned by living there for a year. I talked some about the motivations of the founders – the challenges posed by the 'hydrocarbon twins' of peak oil and climate change – and their hopeful 'sleeves pulled up' compassionate response. I told the 'naughty' stories about how Totnes decided to make their own currency, community owned breweries, bakeries and planting nut trees throughout the towns green spaces. I showed images of their local food, and community owned energy projects. I shared their emphasis on building community relationships. When I had the students sit down and reflect on our time together at the end of the last day, several of them picked out this story as very inspiring. They said things such as

"Being faced with all these problems can be very frustrating... it's inspiring to hear about alternatives", "hearing the story of transition gave me hope!" "for me, hearing stories moved me more than theories or models" and "it is encouraging to think that we might use small scale solutions to solve the big problems".

One of the tasks of the progressive educator is to unveil opportunities for hope, no matter what the obstacles may be. -Paulo Freire (1994) in A Pedagogy of Hope

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Stories are 'meaning makers' (Harré 2011 p. 52). They allow us to enter the world of another and perhaps even envision ourselves in the shoes of the protagonist, if only for moment. Throughout the world, all cultures have had their mythologies, about the fundamental questions such as 'who are we?', 'how does the world work', 'what is the purpose of being alive?' and 'how does change happen'⁶¹. It seems to me that as a global culture, we are going through a transition in the stories we tell ourselves. I think that one of the important tasks of a sustainability educator or advocate is to share stories of active hope, accounts of inspiring actions towards a sustainable future. I know that my own personal interest in sustainability issues was very much influenced by stories of people experimenting with more ecological ways of living. Novels such as Edward Bellamy's *Looking Backward*' (1888), Ursula LeGuins *The Dispossessed*'(1974), Ernest Callenbachs '*Ecotopia*'(1975), films such as '*The power of community – how Cuba survived peak oil*', and the many other real stories of actual people all over the world who are changing their lives and societies for the better, have all shaped my vision and sense of what is possible. If stories are chosen and told carefully with enthusiasm, they can be received and retold, as well as imitated by others.

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⁶¹ The importance of storytelling in social change has been a theme throughout the conversations that has informed this dissertation. In particular in my conversations with writer Charles Eisenstein, and the Transition Movement founder Rob Hopkins who both defined their roles as storytellers.

We are what we eat

In a previous session, several students had expressed an interest in exploring questions around food. I was delighted to hear this, because I find that food is a perfect subject for practicing whole systems thinking. Firstly, we all eat. In fact, eating is a defining characteristic of being alive. All living beings are 'open systems' - we consume and excrete each other and one day we will become food ourselves. The food you eat becomes your body, you breathe out yourself. We are a process of wanting to continue, a desire to be. (Weber 2013)

Secondly, because food is such a vital need, it's provisioning touches all aspects of life: from our personal health and wellbeing, through its production, distribution and consumption, to how this process in turn affects and shapes the earths biosphere and climate⁶². Taking a long view at human history – from hunters and gatherers through subsistence agriculture to the present day global industrial food system – the ways we eat define who we are.

And thirdly, it is tangible. We can touch and feel it - as opposed to in example electricity or energy, which is often hidden away by design – and thus the changes required to move towards more sustainable practices are within our sphere of influence. We can change our purchasing practices, create organic food markets and cooperatives, or simply grow our own. I was not surprised when transition towns co-founder Rob Hopkins told me in our conversation that transition initiatives have one thing in common – most groups begin by looking at food.

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I wanted to begin our day with an embodied mindfulness practice – bringing the students 'back home' before looking outwards. I had come across a practice from the northern Indian region of Ladakh. According to the story, before eating, the community will close their eyes, offering gratitude for the meal by seeing before them the faces of everyone who had brought it into being. I have encountered this practice in the Buddhist tradition as 'tea', 'raisin' and even 'banana' meditation.

I brought a bag of apples – from the food store of the folk high school - to our session. After briefly explaining my thoughts on the day's activities, I invited the students to take an apple and

⁶² In a recent article (Vermeulen et al. 2012) a group of international researchers showed that globally the food system – including transportation and refrigeration – accounts for up to a third of global greenhouse gas emissions.

close their eyes. Then I read a story about the origin of apples - how it arose in south-western Asia, carefully cultivated by generations of farmers across the Caucasus Mountains.

In this moment, remember to breathe deeply, inhaling and exhaling with the apple tree, air made sweet with apple making. Thank the apple tree that, through the process of life itself, renews the planet and fills our lives with sweetness... Now, the apple rests in your hands. Raise the apple to your lips and taste it. As you do, savour the millions of agreements and simple actions, held in a web of relationships, arrayed across time and space, connecting you to each other and to the land.

The apple contains all these. They are its sweetness and beauty. In this moment, remember all that is given to you in the form of this apple and enjoy the fruit of these labours and intentions.⁶³

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Beginning with gratitude in this embodied sensuous way had a positive influence on the rest of the day. Rather than simply stating or attempting to prove through argument that 'everything is interdependent' – however wise an insight – the students literally had a *taste of the interbeing of all life*. Subsequently, several students told me that this activity had made them feel grateful for being alive, and a group of them chose to offer it for their parents and community at an open day event at the folk school the following week.

"The Earth is us. Everything depends on whether we have this insight or not" –Thich Nhat Hanh⁶⁴

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Playing with systems

From this world in miniature, he has learned, as from a model, what is essential in the whole realm of human affairs - Hannah Arendt

When we play, we can simulate, create and explore other worlds, with particular rules, goals and roles. In these 'miniature models' we can act, try things out and learn from our mistakes under safe conditions. Games can be useful as a pedagogical tool because they create a common reference point, a shared experience for a diverse group of people. They can help us uncover our own hidden

⁶³ Excerpt from (http://www.ecoliteracy.org/article/meditations-apple)

⁶⁴ Love letter to the earth (p.27)

assumptions and mental models and thus give us an opportunity to explore our different ways of seeing the world. Playing together can also be joyful, thus creating enthusiasm for finding creative solutions together and strengthening the cooperation of a group or team.

Within the context of sustainable education I think they are particularly relevant. In his book on gaming as a 'futures language' Duke (1974) explains how games can be used to gain perspective on complex circumstances, and explore future situations and scenarios, because they allow us to ask "what if?", and then try out different actions and see their effect on the whole. He uses the word *gestalt appreciation* to describe such an experience of wholeness (p. 9):

Gestalt. A Structure, form, shape or configuration of physical, biological or psychological phenomena so integrated as to constitute a functional unit with properties not derivable from its pars in summation

Here is perhaps the simplest example of how I've tried to awaken this *gestalt appreciation*. Continuing our exploration of the possibility of creating sustainability in our food systems, I took one of the apples from the meditation. Holding it out at arms length, I invited them to imagine that this small apple in my hand was the whole earth. Then as I spoke, I slowly began cutting the apple in pieces. I put aside three quarters of the apple, representing the oceans. Then I removed half of remaining piece, representing desert, tundra, swamps and the arctic. After removing three quarters of mountains, as well as areas too wet, warm and cold for growing food, all that was left was a tiny piece of apples. I invited the nearest student to pass it around, contemplating how that is the relative area of arable land available for producing all the world food and plant fibres. And this area is decreasing year by year because of erosion caused by unsustainable farming practices. Then we spent some time talking over what this means, in terms of how we manage this incredibly precious

soil on which our lives depend, and what we can do to nurture and protect it for the coming generations.



I've also worked with more elaborate and complex activities, actual learning games. Some of them I have developed myself, and some of them I have learnt from others.⁶⁵ During my teaching at the folk-school we played several different such games.

Going back to Ira Shor's (1992) distinction between three kinds of themes, or roads to critical thinking I would say that games lend themselves best when exploring topical and academic themes. Topical, in the sense that the games are 'about' something, an attempt to simulate or replicate in miniature a particular dynamic or behaviour also present in our lives, whether at the scale of a family, organisation, entire economies or ecosystems. I have found that they lend themselves very well to explore more academic themes in the sense that I'm drawing in a range of intellectual traditions and ways of thinking about a specific problem or situation, such as systems theory, economics, ecology, resilience, transition, permaculture, sustainability etc. These are concepts, or thinking tools, that are not drawn directly from the students everyday experience, and where the examples given might also be of a more general kind. One thing that really stood out to me as I facilitated games this time around, was how there is a significant risk of losing or alienating the students if the game is not carefully framed, introduced and debriefed in a way coherent with the generative themes we had previously explored.

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⁶⁵ I am particularly fond of Meadows and Sweeneys '*Systems thinking playbook*' – I have learnt the basics of sustainability systems games design from Dennis Meadows, for which I am very grateful.

5. Conclusions

I began my inquiry by asking the question:

What is the meaning of an 'education for life', who can I learn from, and how can I become a more inspiring and effective sustainability educator?

Throughout the past months, I have explored these questions in several different ways.

To explore the meaning of what I have called an 'education for life' i have carried out a comprehensive litterature review in relation to questions concerning the purpose, challenges, form, content, curriculum and pedagogy of sustainability education. In my search for general principles, i discovered the importance of 3 distinct dimensions: the inner, relational and systemic.

The inner dimension concerns the cultivation of self-awareness and self-knowledge, and has to do with ethics, emotions, identity and motivation. It is suggested that this dimension if often overlooked in most approaches to sustainability education, and that it is a crucially important one. Different pedagogical tools are suggested to address this dimension in an educational context, such as contemplative practices and mindfulness.

The relational dimension concerns the need for cultivating practical and interpersonal skills. It has to do with learning to understand other people's perspective, and develop empathy and compassion. It is suggested that in a world that is becoming more uncertain –

Because of environmental, social and economic changes – developing such qualities are very important. The significance of the role of relationship in social change is also explored.

The systemic dimension represents the need for cultivating the understanding of 'interbeing'. It has to do to with understanding the complexity of the world around us, and how the systems we are a part of interact to create webs of interdependence. If we want to reverse the fragmentation, we need an education that is based on a holistic systems view of life, and sees the world as 'a communion of subjects rather than a collection of objects'.

Part of this implies a vision of education based on the idea of nature as our primary teacher.

In the spirit of relational being, i have *entered into relationships* with people and communities with similar aspirations to my own. I have exchanged letters, skyped and met with many thinkers and practitioners. To study meditation and mindfulness, I travelled to the Buddhist monastery Plum Village in southwest France, founded by Vietnamese Zen master Thich Nhat Hanh. Here i experienced mindful eating, walking and working, and immersed myself in a first person inquiry of the practice of mindful community living.

I went on a walking trip in the Aurlandsdal of western Norway, in the company of a group of educators with a shared interest in deep ecology, sustainability education and storytelling. As we hiked through the mountains, we shared experiences and stories, drawing on the local ecology and landscape. I heard many stories that i want to use in my own teaching, and had a chance to reflect together in what felt like a *community of practice*.

Finally, I have carried out an action experiment in sustainability education. Spending two weeks teaching young adults at Vestjyllands Højskole gave me an opportunity to explore in practice, what it takes to inspire hope and engagement. I have taught using stories, games, drawings, lectures, and conversation. This practical experience has convinced me that at the end of the day, the role of the sustainability educator is to water the wholesome seeds in my students, and create the right conditions for growth and learning.

It is impossible to change or teach someone who does not want to change or learn. Rather, i have come to perceive my role, as an educator who 'facilitates a learning process', where a community of learners can explore together.

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