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Ecology and the Art of Sustainable Living

David Haley

In western culture, the concept of ecology emerged alongside quantum theory, complexity theory, chaos theory, systems theory, cybernetics and psychology. Across disciplines, artists such as Marcel Duchamp, James Joyce and John Cage embraced the theories of physics and the Surrealists, Expressionist and DaDa movements contributed almost as much to psychology as they gained from it. With notable exceptions, until very recently few artists have taken up the issues of ecology. Now, as we face combinations of the most dire social and environmental crises known to our kind, has ecology found its time? How might arts practices address these issues? What can art and ecology contribute to resolving 'the carousel' of challenges?

Using examples of projects by Helen Mayer Harrison, Newton Harrison and myself, this paper considers the concepts, the practices and the teachings of a whole systems approach to ecological art. It further places ecological art in a practical context that offers some tangible approaches to shifting the paradigm from Sustainable Development to 'sustainable living', 'ecological resilience' and 'futures capabilities'. One of the contributions the arts may offer is 'keeping the discourse plastic'.

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Ecology and the Art of Sustainable Living

RESILIENCE

As tipping points pass
Believing what is normal
Grace under pressure

Profound distractions
Vanity of vanities
Left to the Market

On the ship of fools
Singing deaf and dancing blind
Now, we're acting mad

Elite ignorance
Inertia from white box brains
Expert arrogance

In a complex world
Leading a child by the hand
Here, under the sun

Not so much knowledge
Living in a quantum world
A shift in thinking

Create and destroy
The rhythm of Shiva's drum
Never stop dancing

Richness of life
You to me to them as one
This is all there is

As the globe warms
The other side of collapse
My tears taste of salt

Fig. 1.One Man, One Tree, One River, One Day – River Eden, Carlisle. Photo: David Haley, 2008.

In November 2007 I was invited to lead an Arts and Ecology Master Class for postgraduate arts, design and architecture students at the Guangzou Academy of Fine Art, China. The programme met with much success, so I developed it further, for a 'charrette' with similar students and professors at the National Kaohsiung Normal University, Taiwan, in April 2008.

This paper is a developmental summary of that programme and it continues to evolve each time I present it. Audiences have included artists, earth scientists, hydrologists, engineers, cultural sociologists, fish-farmers, architects, students and educationalists in Plymouth, Ghent, Beijing, Cambridge, Sheffield, Bristol, Budhai (Taiwan), Manchester and Aberdeen. It is a kind of polemic, a discourse, a dialogue and potentially a manifesto for shifting the way we might proceed in the world. For some this attempt at a world-view or broad brushstroke approach may not sit well with analytical forms of academic research and, to some extent this is the crux of the matter, as the arts-led, practice-based research methods offered here consider 'convergent knowledge' from many disciplines to construct situations for new understandings to emerge. Those forms of understanding are sometimes embedded in iterative, intuitive, improvisational, tacit and experiential means of inquiry. George Lakoff and Mark Johnson expand on this idea in their book, Philosophy in the Flesh:

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> 'What fills out embodied realism, permitting us to move far beyond mere observation and manipulation, are several crucial findings about our embodied and imaginative capacities.' The second of these '... is the existence of conceptual metaphor, which allows us to conceptualise one domain of experience in terms of another, preserving in the target domain the inferential structure of the source domain... Such inferences can then be projected onto scientific subject matters to give explanatory accounts for existing data and to make predictions.' ... Each subject matter is thus a test bed for such a theory. We speak of evidence for a scientific theory as being "convergent" when the results all support the same explanatory hypothesis.'[1]

Shifting from a description of the pedagogical process, the paper engages the reader directly in the issues that were generated by the master class, charrette and subsequent presentations, each of which I consider to be performances in their own right, and central to artistic way of knowing, or as social scientist, Hans Dieleman puts it:

> Artful doing/knowing is a way to explore and understand reality, not limiting oneself to scientific methods, theory or scientific language. It uses the whole repertoire of human experiences such as images, ideas and practices gained throughout life. It results in insights, visions and symbolic meaning that is communicated through a range of means of communication such as painting, sculpture, interventions, literature, music and the like.[2]

Fig. 2. Bubble World, Making Our Futures Master Class, Guangzhou Academy of Fine Arts, China. Photo: David Haley, 2007.

[1] George Lakoff and Mark Johnson *Philosophy in the Flesh. The Embodied Mind and Its Challenge to Western Thought* (New York: Basic Books, 1999), p.91.

[2] Hans Dieleman, The Competencies of Artful Doing and Artful Knowing in Higher Education for Sustainability, in 'Agents of Change', http://agentsofchangeproject.blogspot.com/2010_07_01_archive.html (2010)

Fig. 3 Sea Level Rise Tank, Making Our Futures Master Class, Guangzhou Academy of Fine Arts, China. Photo: David Haley, 2007.

Fig. 4 Lagoon Guide, A Dialogue with Oysters: the Art of Facilitation, commissioned by Tropic of Cancer Project, Budhai, Taiwan. Photo: David Haley, 2008.

The art of making futures

So, to the pedagogical programme itself, and as David Bohm wrote, 'dialogue is not about new knowledge, but new ways of thinking.'[3] I drew upon Paul Klee's Pedagogical Sketchbook as the guiding metaphor. He begins with the words: 'An active line on a walk, moving freely, without a goal'[4] and draws us into a Tantric-like treatise on becoming. Another word for becomingness is grace.

3 David Bohm et al, 'Dialogue: A Proposal' at http://world.std.com/~lo/bohm/0000.html (1991), p.5.

4 Paul Klee, *Pedagogical Sketchbook* (London: Faber and Faber, 1989), p.1.

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The art of observation

The Master Class and charrette accepted Global Warming and Climate Change as given. We then took on the probabilities of sea level rise, combined with increased storm activity and intensity. This called upon some of the data that had contributed to 'Greenhouse Britain: Losing Ground, Gaining Wisdom,'[5] a project I developed with Helen Mayer Harrison and Newton Harrison. Although the predictions provided by the Tyndall Centre for Climate Change in mid-2007 seem rather conservative now, it was the first time the Tyndall Centre had combined increasing sea level volume with storm surges. Recent information about the acceleration of ice-melt and permafrost thaw, reduce the timescales dramatically.

We then considered species extinction and how, according to some, it has already passed the tipping point towards the Sixth, or Holocene Extinction Event.[6] Related to this, there's the biggest taboo subject of them all, the exponential increase in human population. Donella and Donald Meadows[7] flagged-up the impending catastrophe of exceeding the planet's physical capacity some years ago but few governments apart from the Chinese are willing to even admit it.

I was, in fact, amazed that the students I worked with in Guangzou, China, seemed to have a good awareness of some of these issues and they were certainly aware of the levels of pollution. However, most were sure that the State was in control of the situation and that it would come up with technological solutions. Interestingly, the Kaohsiung, Taiwanese students had similar levels of knowledge, but were less confident of their Government's ability to cope.

Fig 5. Tide Turns, Waters Dance: The Writing on the Wall, commission by Bamboo Culture International, Tamshui, Taiwan. Photo: David Haley, 2007.

5 R. Nicholls, R. & R. Tol, 'Impacts and responses to sea-level rise: a global analysis of the SRES scenarios over the twenty-first century.' Philosophical Transactions of The Royal Society (2006) 364: 1073-1095.

6 Richard Leakey, *The Sixth Extinction: Biodiversity and its Survival.* (Phoenix, London. 1996)

7 Donella Meadows, Dennis Meadows & Jogen Randers, *Beyond the Limits: Global Collapse or Sustainable Future* (London: EarthscanPublications, 1995)

Fig. 6 Kids with Frog Spawn, A Walk On The Wild Side, Manchester. Photo: David Haley, 2007.

The art of urgency

So, let us, now, consider some of the basic consequences of the Environmental Crisis.

Over the next hundred years, land loss caused by sea level rise (5 to 10 metres) is not that much, maybe 10%, but the land that is lost and the incursion of saline water will have dramatic impacts on land use and the availability of freshwater.[8] As human beings, let alone artists and designers, I believe we need to invent new ways to produce food and generate freshwater, learn how to manage the migration of species and people, design new forms of dwelling and control population, sequester carbon and fulfil energy needs, consume less and produce no waste. We need to devise and implement new economic systems. You don't have to be an economist to see that the global, market-led economy doesn't work – the current depression has evidenced that.

The art of learning

But why Art? How can art contribute? I think it is true to say that not long ago most people thought that climate change was about science (even if they felt they themselves to be somehow to blame). Then along came Sir Nicholas Stern[9] and the scientific monopoly on Climate Change was broken, as politicians and the general public understood Climate Change to be the main driver of economics... and may even be largely driven by economics. Our guilt, however, was maintained as the economics was supposedly driven by our lifestyle, our culture. So I would say, it is in culture as society, culture as ethos and culture as a creative medium that we may find a role for the arts to address environmental crises.

8 Helen Mayer Harrison & Newton Harrison, D. Haley, *Greenhouse Britain: Losing Ground, Gaining Wisdom, An artwork*. See: http://greenhousebritain.greenmuseum.org/ (2007)

9 Nicholas Stern, The Stern Review' (HM Treasury, UK Government, 2006) at http://www.hm-treasury.gov.uk/stern_review_report.htm

Even in its less esoteric sense, I believe that our society needs the creative thinking that the arts may offer to achieve a more balanced and diverse approach to governance. At the heart of education, at all levels, I believe there is a great imbalance that needs to be redressed towards the serious inclusion of art. So, let us consider some of the things artists and creative people have to offer.

Fig. 7 Greenhouse Britain: Losing Ground Gaining Wisdom, Feldman Fine Arts, New York. Photo: David Haley, 2007.

The problem with problems

Much education is developed on the premise of 'problem based learning' (PBL). In certain respects, PBL is more appropriate than traditional lecture-based teaching, as it promotes active participation outside of the classroom. However, in the way that is most widely applied it has a fundamental flaw – it assumes that the world is a problematic that needs to be solved. Since the 1960s, generations of medics, economists, architects, engineers, designers and scientists have been trained, using PBL,[10] to believe that they can go into the world with their skills to right all wrongs. One of the difficulties, I understand, that arises from this belief is that they only concern themselves with identified problems – fix the problem and it has gone. The narrow focus required for this approach deals with problems in isolation, as a 'closed system' and deals with neither context nor relationships.

Making questions

Now let us consider a skill I observed in the students of the Art As Environment course at Manchester Metropolitan University - 'question based learning' (QBL). When it's practiced intuitively by many artists

[10] F. Forsythe, 'Problem Based Learning' in *The Handbook for Economics Lecturers* Higher Education Association, Economics Network. (2002). Chapter 2.1 at http://www.economicsnetwork.ac.uk/handbook/pbl/21.htm

and creative people, this approach opens up situations for exploration in non-linear ways. Problems may be found and resolved, and new questions may be formed in the process. QBL is based on 'whole systems' seeing and thinking to promote wider and deeper learning, rather than solutions. This is potentially an ecological approach to learning; an 'eco-pedagogy,'[11] or 'Eco Literacy'[12] that is generated by the context, relationships and complex systems, not analytical, reductionist methods of understanding the world. In a similar vein, Arne Naes, the founder of the Deep Ecology Movement wrote:

> The essence of deep ecology," he says, "is to ask deeper questions." This is the essence of a paradigm shift. We need to be prepared to question every single aspect of the old paradigm.

He continues:

> It questions this entire paradigm from an ecological perspective: from the perspective of our relationships to one another, to future generations, and to the web of life of which we are a part.[13]

Above all, QBL promotes more questions and these act as feedback loops of creativity and expansive knowledge.

Knowledge, then becomes an 'open' or semi-closed system, permitting outside influences to enter and pass through but without losing the form, or pattern of the entity. Knowledge may be created from the relationship of many parts and the parts may be shared by multiple disciplines; thus knowledge itself can be considered plastic, dynamic and ecological.

We may then move from Modernist, solution driven, reductionist, problem based learning that seeks certainty, beyond the dialectic of Postmodernism, to an expansive, question based learning that accepts uncertainty and on to an indeterminate 'Next Generation' of narratives; moving on to the emergence of diverse and complex, whole systems, operating in 'dynamic equilibrium' – grace in evolution, becoming, or 'ecopoiesis.'[14]

11 David Haley, 'The Limits of Sustainability: The Art of Ecology.' in. S. Kagan & V. Kirchberg, (eds.) Sustainability: *A New Frontier for the Arts and Cultures* (Frankfurt, Germany: VAS-Verlag, 2008), p.5.

12 Fritjof Capra, 'Eco Literacy: The Challenge for Education in the Next Century.' Liverpool Schumacher lectures (Berkley, California, USA: Centre for Ecoliteracy,1999)

13 A. Naes referenced in Fritjof Capra, The Web of Life: *A New Synthesis of Mind and Matter* (London: HarperCollins, 1996), p.162.

14 David Haley, 'Reflections on the Future – "O brave new world": a change in the weather,' in A Remesar (ed.), *Waterfronts of Art I, Art for Social Change* (Spain: University of Barcelona, CER POLIS, 2001) p.3. www.ub.es/escult/1.htm and CD ROM pp. 97-112.

Anthropologist, Tim Ingold argues:

> ... organism plus environment' should denote not a compound of two things, but one indivisible totality. That totality is, in effect, a developmental system (cf. Oyama 1985), and an ecology of life – in my terms – is one that would deal with the dynamics of such systems. Now if this view is accepted – if, that is, we are prepared to treat form as emergent within the life-process – then, I contend, we have no need to appeal to a distinct domain of mind, to creatura rather than pleroma, to account for pattern and meaning in the world. We do not, in other words, have to think of mind or consciousness as a layer of being over and above that of the life of organisms, in order to account for their creative involvement in the world. Rather, what we may call mind is the cutting edge of the life process itself, the ever-moving front of what Alfred North Whitehead (1929: 314) called a 'creative advance into novelty.' [15]

[15] Tim Ingold, *The Perception of the Environment. Essays on livelihood, dwelling and skill* (London: Routledge, 2005), p.19.

Fig. 8 David Haley Performing 350 St John's Street, Liverpool. Photo: M Yates, 2009.

The ennobling question

Now I would like to introduce a concept developed by Newton Harrison of the 'Ennobling Problem', but I prefer the 'Ennobling Question.'[16] The principle came from discussions we had while on a lecture tours 2006/7, and focuses on the notion of 'post-disciplinarity'. In practical terms, the Ennobling Question may dissolve the old art/science dialectic. If an Ennobling Question is placed at the centre of our collective concerns – in this case Climate Change -, it could promote opportunities for ALL disciplines to engage with it on an equal footing. None of the disciplines would be threatened. All are valued for their particular contribution

[16] David Haley, 'The Limits of Sustainability: The Art of Ecology.' Chapter in S. Kagan & V. Kirchberg (eds.), *Sustainability: A New Frontier for the Arts and Cultures* (Frankfurt, Germany: VAS-Verlag, 2008), p.10.

and thereby increasing the robustness of each discipline, while applying maximum attention to the most urgent issues of our time.

This, in turn, raises questions about education and my opinion that all school and university departments, all funding and research councils need to place Global Warming/Climate Change at the centre of their curriculum. If, indeed, the combined environmental crises of Global Warming, Climate Change, the Sixth Extinction and the human 'population explosion were addressed by an 'eco-centric culture,'[17] operating as a whole system, the interdependence of these issues would be revealed.

I consider this response to be very necessary, as governments, commerce and industry control the Global Warming/Climate Change discourse to maintain the status quo and normative values of our increasingly monocultural society – energy, security, economics. This may then suggest that a role of art is to intervene and 'keep the discourse plastic.'[18]

How to make an intervention

So, how might the arts engage, or intervene in this discourse? One response is that a person may join a system or a discourse anywhere and at any time.

Then you might ask: 'What needs to be done?' It seems that the dominant culture will always appropriate the discourse for its own ends (for example, the way in which television, radio and newspapers prioritise the news, based on the agenda of proprietary politics, societal norms and belief systems). There's nothing necessarily sinister in this. It's how a culture becomes dominant. However, if society itself is to find new meanings and evolve, it needs to shift the language as a continuing act of creativity – inventing and re-inventing. This, I believe, is another role available to art - flipping the metaphors to gain new attention, new connections and above all, to change the story of the future. As Ilya Prigogine writes:

> The inclusion of irreversibility changes our view of nature. The future is no longer given. Our world is a world of continuous "construction" ruled by probabilistic laws and no longer a kind of automaton.

He continues:

> We are led from a world of "being" to a world of "becoming."[19]

Therefore, another function of art might be for artists and creative people to create the capability to envision many possibilities for many futures, or as Scottish artist Eduardo Paolozzi called for: '... an endless

17 David Haley, 'Reflections on the Future – "O brave new world": a change in the weather,' in A Remesar (ed.), *Waterfronts of Art I, Art for Social Change* (Spain: University of Barcelona, CER POLIS, 2001), p.7. www.ub.es/escult/1.htm and CD ROM pp. 97-112

18 N Harrison, referenced in David Haley, 'The Limits of Sustainability: The Art of Ecology.' Chapter in S. Kagan & V. Kirchberg (eds.), *Sustainability: A New Frontier for the Arts and Cultures* (Frankfurt, Germany: VAS-Verlag, 2008), p.9.

19 Illia Prigogine, *Is Future Given?* (World Scientific Publishing Co. Pte Ltd.London, 2003), p. 39.

set of combinations a new culture in which way problems give way to capabilities.'[20]

To map a field of play

The questions continue: How may we find our 'field of play' – the place, the timescale and collaborators for a project? And this prompts three questions. Many others may follow, but these may initially help to situate and contextualise a project, set working parameters and define the limits of its concerns. While at first this strategy might sound constraining, I believe it opens-up deeper possibilities by maintaining attention and avoiding what Aldus Huxley referred to as, '... man's almost infinite appetite for distractions.'[21]

The first question is used by The Harrisons in all their works, **"How big is here?"** In landscape terms, it's necessary to find the geophysical forms and eco-systemic character that provide the natural boundaries to which the project may be applied. It may be the watershed, landmass, or coastal form, but until the field of play is established - the place of concern, the theatre of operation – the project will be lost to the whims of others.

Next, **"How long is now?"** This question is derived from 'Integral Futures Studies.'[22] 'How long is now?' considers the timescale for the work in hand. The anecdote from *The Clock of the Long Now* is that many indigenous peoples think of 'now' as being seven generations past and seven generations to the future – about 375 years.[23] Compare this with an electronic nano-second, or a geological event of millennia. What is a temporary artwork? What is a long-term investment? How long will London, Kaohsiung, Guangzou or Liverpool be situated in their current geographical positions?

Finally, **"Who is here now?"** This brings the first two questions together. In time and space, you have to know with whom you will work? Who is the work for (human and non-humans alike)? How will the work impact on those who are here, now?

And this leads us to an extra rhetorical question and guiding principle that Christopher Alexander suggests in his book, *A New Theory of Urban Design:* "What is the most important thing that I can do now, at this moment, to bring the whole to life."[24]

There is an anecdotal truism that, 'artists are like explorers - they are permanently lost'. Not to be confused with being misplaced, or going astray, this state of deliberate 'lostness', or the practice of 'mindfulness/ awareness'[25] is concerned with a realisation of standing at the abyss of now, gazing to the future. This may be unnerving for some people (clients, collaborators, stakeholders, funders, designers, engineers – typically, they

[20] Eduardo Paolozzi, *Lost Magic Kingdoms: and Six Paper Moons from Nahuatl* (British Museum Publications, London, 1985), p. 7.

[21] Aldous Huxley, *Brave New World Revisited* (HarperCollins, London, 2007), p.27.

[22] Richard Slaughter, *Futures Beyond Dystopia: Creating Social Foresight* (RoutledgeFalmer, London, 2004), p.3.

[23] Stewart Brand, *The Clock of the Long Now: Time and Responsibility* (London: Phoenix Paperbacks, 1999), p 163.

[24] Christopher Alexander, et al, *A New Theory of Urban Design* (New York: Oxford University Press, 1987), p 67.

[25] F. Varela, E. Thompson & E. Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (The MIT Press, Cambridge, Massachusetts,1993), p.23.

like a clear brief that delivers predetermined criteria) but this state of being lost, this uncertainty, this realisation of indeterminacy comes with the territory of breaking new ground and seeing into the future. The above questions are like Klee's line, mentioned above, guide the course of action and the process of the work.

Fig. 9 Wild Walk 2, The Three Canals, A Walk On The Wild Side. Manchester. Photo: David Haley, 2005.

Whole Systems Ecology

I mentioned earlier the term, 'whole systems ecology' and it requires some explanation.

As Fritjof Capra suggests in The Web of Life: a Synthesis of Science,[26] 'systems thinking' may denote the paradigmatic shift in thinking from Cartesian, mechanistic, atomistic, reductionism to an ecological, integrated, contextual, organic understanding of the whole. It emerged simultaneously during the 1920s from several disciplines, particularly quantum physics, Gestalt psychology and the biological sciences. Essentially, the pattern of the whole becomes the focus of attention, rather than an analysis of parts, the form rather than the material or components.

Through quantum physics the shift from objects to relationships goes even further. Capra asserts, "What we call a part is merely a pattern in an inseparable web of relationships." This represents a radical shift in thinking from what is still regarded as the 'norm' of how we perceive the world in contemporary Western culture – the relationship between figure and the ground shift. An object is a pattern of particles within the whole and particles are themselves systems operating at a different systems level.

[26] Fritjof Capra, *The Web of Life: A New Synthesis of Mind and Matter* (London: HarperCollins, 1996), p.36.

Apart from anything else, this 'reality' may be profoundly psychologically disturbing to many people, as "... systems thinking involves a shift from objective to 'epistemic' science; to a framework in which epistemology – 'the method of questioning' – becomes an integral part of the theories."[27] This concept is, of course, central to my development of Question Based Learning.

[27] Ibid, p.36.

As I understand it, three principle properties of 'whole systems ecology' are 'diversity', interconnectedness, and 'finite systems'. If we apply these principles to contemporary environmental crises, new understandings may be deduced.

Diversity – species richness, complexity – is the essence of evolution and the continuing process of life that runs counter to entropy and the loss of energy.

Interconnectedness, or more importantly interdependence, provides a deeper understanding of how the amazing complexity of relationships work, taking the understanding of ecology and ecosystems to an imperative.

And a third principle of whole systems ecology is, finite resources, or as the supermarket sale declares, 'when it's gone, it's gone'. Despite our planet's ability to regenerate itself, there is always loss of energy. 'Non-equilibrium thermodynamics'[28] understands our cosmos to be moving from hot to cold through irreversible time. In the human timescale, the air we breathe, the water we drink the food we eat, the energy we release are all finite resources. We may conserve and care for them, we may pollute and waste them, but this is all there is.

[28] E. Schneider & D. Sagan, Into the Cool: *Energy Flow, Thermodynamics, and Life* (The University of Chicago Press, Chicago, 2005).

It is important to understand that each property - diversity, interconnectedness and finite resources – is integral to whole systems ecology and therefore interdependent. The parts cannot function independently, they are a system. At another level, these properties might also be understood as 'process, pattern and structure'[29] and here we see the possibility for one system to display the properties of another 'emergent' system.

[29] Fritjof Capra, *The Web of Life: A New Synthesis of Mind and Matter* (London: HarperCollins, 1996), P.75

Forms of resilience

This brings me to the most controversial part of this paper, resilience. With regard to Global Warming and Climate Change, the Intergovernmental Panel on Climate Change got to the concept of resilience in 2001. But it took the UK Government and its agencies a long time to move on from 'awareness' and 'behaviour'[30] as forms of mitigation, to the need for adaptation to the inevitable changes.

[30] Futerra, Recommendations to: UK Communications Strategy on Climate Change – Executive Summary (London: Futerra Communications Ltd. 2005)

For this purpose, it is worth considering two forms of resilience, engineered resilience and ecological resilience. The former takes the notion of duration, sustainability perhaps, and develops ways in which we might prolong the status quo. Retaining what we in the developed world enjoy as a comfortable lifestyle. However, this form of resilience is also akin to slavery and the process of desertification – we may endure them, but they are not very desirable.[31]

Ecological resilience, however, considers the probability of ecological perturbation, or systems collapse. Evolution is not necessarily a long steady process; it is often marked by dramatic shock events with equally dramatic consequences. The dinosaurs, for instance, did not survive the climate change events they experienced. However, once we think of collapse as a likely phenomenon, we are liberated to focus on how to cope, even consider life on the other side of collapse.[32] So, what plans and strategies and skills do we need?

How will we make our future(s)?

We may then consider the guiding question, 'How will we make our futures?' 'Futures', not future, because we need to include many diverse options. In fact, a diversity of futures should contribute to ecological resilience, because no one knows for sure which strategies will work. Richard Slaughter, President of the World Futures Studies Federation and Director of the Australian Foresight Institute, enforces this imperative:

Rather, it lies in escaping from – or rather, transcending – the 'flatland' imposed on us by three-hundred years of reductionism and epistemological narrowness. It lies in acts of recovery in each and every domain: the recovery of a deeper sense of self, of higher transcendent ways of knowing, of states of social being that go beyond the merely rational and so on. In Wilber's words: 'we cannot build tomorrow on the bruises of yesterday... This means a new form of society will have to evolve that integrates consciousness, culture and nature, and thus finds room for art, morals, and science – for personal values, for collective wisdom, and for technical know how.[33]

Artists and creative people are said to possess certain skills and I wish to leave aside art as a commodity. I believe the objects and products are useful for publics to focus their attention and artists need the craft or artfulness to give form to their processes and stimulate cognition; art may contribute to our very existence.

Finally, I would like to offer another view of futures thinking in ecology, it is an exchange I had with Sven Erik Jorgensen, a world-renowned ecological mathematical systems modeller and Editor-in-Chief of the journal Ecological Modelling. I attended a course he led in 2005 at

[31] See Brian Walker, et al 'Exploring Resilience in Social-Ecological Systems Through Comparative Studies and Theory Development': Introduction to the Special Issue, *Ecology and Society* (2006) 11(1): 12, [online] URL: http://www.ecologyandsociety.org/vol11/iss1/art12/

Brian Walker, et al 'A handful of heuristics and some propositions for understanding resilience in social-ecological systems'. *Ecology and Society* (2006) 11(1): 13. [online] URL: http://www.ecologyandsociety.org/vol11/iss1/art13/

[32] Jared Diamond, *Collapse* (Penguin, London. 2005)

[33] Richard Slaughter, *Futures Beyond Dystopia: Creating Social Foresight* (RoutledgeFalmer, London, 2004)

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the Society for Ecological Restoration World Conference in Zaragoza, Spain. At the end of the course I thanked him and asked, "... does this process of modelling produce any better questions"? He replied, that large corporations, governments and world organisations paid him lots of money to produce the familiar looking flow charts or models that are intended to bring clarity to a problem. But, he said that they never pay him for the essential start of the process – the 'brain-storming', 'think tank', or dialogue – namely, the creative process of forming and framing the questions, engaging with others, and considering many approaches. This taking time must not be underestimated. Together with accurate data collection, this element is the most important part, because as I would say, the whole project flows from making time a matter of urgency.

And if we take the visual form of the mathematical model, we may witness similarities with what all art does – it tells stories. In particular, we may note the function of an icon. Icons are not just the image of something, they are the embodiment of that which they depict – it's not the picture of the Madonna, an icon is the visual metaphor, the 'gate' to pass from earth to heaven to experience the Madonna. But without knowledge of the story, the lady draped in the blue shawl, holding a baby, is just a lady in a blue shawl, holding a baby. This integration of story and image forms the basis of our cultural cognition – our means of understanding the world. This may be the art of bringing the world into being, or the story of the art of becoming?

The final entry in Paul Klee's *Pedagogical Sketchbook:*

> We have arrived at the spectral colour circle where all the arrows are superfluous. Because the question is no longer: "to move there" but to be "everywhere" and consequently also "There!"[34]

[34] Paul Klee, *Pedagogical Sketchbook* (London: Faber and Faber, 1989), p.37.