

Seeing the whole

Art, ecology and transdisciplinarity

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Ver la totalidad: arte, ecología y transdisciplinarietà

Abstract

Climate Change and species extinction are perhaps two symptoms of a psychotic society that has lost contact with reality. The pandemic pathology of economic and industrial values have possibly altered the very course of planetary evolution. As humankind starts to recognize that apocalyptic change is imminent, the practice of art(s) may be an essential discipline to emerge beyond collapse.

This paper considers art in an ecological context to help us 'see anew' the potential for adopting complex ways of thinking, and 'transdisciplinary' ways of working. Challenging existing belief systems and normative ways of thinking through 'question-based learning', we may consider drawing as a means of gaining insights and practical approaches to diverse futures. 'Turning the face of disaster to the face of opportunity', this paradigm shift attempts 'to bring the whole to life' through 'growth ecology'.

Keywords

Art, Ecology, Complexity, Transdisciplinarity, Climate Change

Resumen

El cambio climático y la extinción de las especies son quizá dos síntomas de una sociedad psicótica que ha perdido el contacto con la realidad. La patología pandémica de los valores económicos e industriales posiblemente ha alterado el propio curso de la evolución planetaria. Tan pronto como la humanidad empiece a reconocer que el apocalíptico cambio es inminente, la práctica del arte/s puede ser una disciplina esencial para emerger más allá del colapso.

Este artículo considera el arte en un contexto ecológico para ayudarnos a "ver con una nueva mirada" (to see anew) el potencial para la adaptación a complejas maneras de pensamiento y transdisciplinarias formas de trabajar. Retando los sistemas actuales de creencias y las maneras normativas de pensamiento a través del "aprendizaje basado en las preguntas", podemos considerar el dibujo como un medio de obtener conocimientos y enfoques prácticos para futuros diversos. "Transformar la cara del desastre en la cara de la oportunidad"; este cambio de paradigma trata de "traer la totalidad a la vida" a través del "crecimiento de la ecología" (growth ecology).

Palabras Clave

Arte, Ecología, Complejidad, Transdisciplinarietà, Cambio Climático

The architect Christopher Alexander writes: “What is *the* single best thing that I can do now, at this moment, to bring the whole to life” (Alexander, 1987: 62).

Maybe it's to offer a poem?
Born of disorder
An unspeakable moment
A matter of chance

In the meantime
In the space of human choice
Icons of our dreams

The Minotaur roams
Twix travelers and merchants
Labyrinth of mind

Techno-sapiens
Rich hothouse bastards
Between dignity

Inevitable?
Birth of new reality
Paradox conceived

To heal the whole
Healing is believing
Seeing the whole

Not everyone sees the world as I see the world. That's good, but I suggest that there is a whole area of knowledge, and more important, a whole way of seeing, knowing and doing that for the most part is denied us. As the French philosopher Edgar Morin puts it: “The modern pathology of mind is in the hyper-simplification that makes us blind to the complexity of reality” (Morin, 2008: 6).

The potential for complexity and transdisciplinarity are, I argue, not just questions of academic discourse or utopian new ageism, but essential to our survival as a species.

To pick up on the word “pathology”, used by Edgar Morin, this condition of the modern mind is perhaps the symptom of a debilitating illness, caused by a social denial of diversity – cultural diversity and biodiversity. But how has this situation arisen? What are the conditions for this malady, and is it curable? We know the world, we experience the world, and because of our embodied organs, systems and cognition we are a part of and apart from the world.

However, in much contemporary Western thinking, the world is seen as somehow separate from us, and even our bodily parts are seen as separate entities. Of course, this Cartesian compartmentalization of the world is to some extent true. There are specific differences between things, and there are hierarchies of things like evolution and food-

chains, but at the same time, I suggest that everything is part of an integrated whole.

In itself, this is not a new concept. Throughout the 20th Century many systems thinkers emanating from physics, psychology, cybernetics, ecology and other disciplines have come to see the “whole picture”. However, few have recognized or resolved the inherent paradox between a world of separate entities ruled by immutable laws, and a world of an integrated whole system of systems. So, how can these opposites exist in the same world? Perhaps, different “Realities” exist in the same world?

Ecology & Art

To briefly contextualise my perspective, I refer to my practice as ecological art. I define ecology as the study of organisms, their relationship to each other, and their relationship to their environment. My practice is concerned with those relationships, and may, therefore, be understood as an expanded, process form of art. An art that is not dependent on any one discipline, skills-base, or material. It is, itself “ecological” and it is, as Sam Bower, the Director of greenmuseum.org, calls it, “...art as a verb, rather than Art as a noun”. So, the relationships are not a static set of connections, but a diverse flux of natural and cultural interdependencies – a complex system of life that dances between creation and destruction.

I then make the argument for a shift in thinking of art as a thing (object, product, or value added commodity), to a “creative process”, and conceptually it focuses on ecology, the process of living. Gregory Bateson writes:

The question is not only ethical in the conventional sense; it is also an ecological question. The means by which one man influences another are a part of the ecology of ideas in their relationship, and part of the larger ecological system within which that relationship exists. (Bateson, 2000: 512)

The word “art” is derived from the ancient Sanskrit word, “*rta*”. *Rta* retains its meaning in contemporary Hindi as a noun-adjective for the dynamic process by which the whole cosmos continues to be created, virtuously. It refers to the right way of evolution and we still talk about excellence, or the correct way of doing something as an “art” – the art of cooking, the art of football, the art of gardening, ‘The Art of Archery’, ‘The Art of Making Cities’, and even “The Art of War”. So, rather than being trapped in ‘The Re-enchantment of Art’ (Gablik, 1992), *Rta* offers an epistemological shift in our understanding of what art may become, how it may work, what it may do and our part in its future. Furthermore:

Rta conjugates into the verb “*ritu*” (ritual), that refers to the correct order or sequence of *rta* (i.e. the cyclical pattern of the seasons, or the progression from seed to leaf and root to tree to blossom to seed). “Art” may have lost much of its etymological meaning, but maybe it retains the potential to re-emerge as a metaphor for sustainability, like a flower waiting for rain in some future desert? (Haley, 2011)

However, it is the potential convergence of art and science that drives this form of ecology; from the dynamic tension between these seemingly discordant elements (art and science, culture and nature) the practice emerges through diversity and the synthesis of knowledge. Morin referred to the condition of science when he wrote: “... knowing is at the same time separating and connecting, it is to make analysis and synthesis. Both are inseparable...” (Morin, 2005: 25)

Taking a further step, we may move from “an art of ecology”, implying the use of art to creatively address environmental issues, to “an ecology of art”, whereby the potential of ecology becomes a “catalytic feedback loop” that potentially takes art to a new level of understanding in Culture **and** Nature, and from this understanding new patterns (forms) of practice may emerge. And so, we move on from Morin’s notion of emergence, “order, disorder, organisation”, to understand a complex system of art I have termed, *ecopoiesis* (Haley, 2001: 106). *Ecopoiesis* being the “living organisation” from which art (or *rta*) may emerge. Of course the concept, *ecopoiesis*, is not passive, but an active process of becoming or contextual evolution; the methodology, *ecopraxis* (Haley, 2008: 205), is intrinsically a form of critical learning; and the critical learning, *ecopedagogy* (Haley, 2008: 205), promotes a fully contextualised, dynamic form of knowledge.

However, we must be aware that the application of the prefix, “eco” is not a mere affectation of “green thinking”, but the deployment of ecological principles, qualities, and values – interdependence, systematic processes, complexity and emergence. In this sense art is integral to our evolutionary functioning, and this embodied “fundamental culture” (Morin, 2005: 23) is essential to maintaining our health.

Complexity & Reality

In the modern world, notions of complexity and ecology evolved at approximately the same time and bounced off one another to create meanings for each other, finding resonance with quantum physics, gestalt psychology, cybernetics, and other forms of systems thinking. But somehow, despite their successful interpretations and applications, they have been accepted by neither mainstream science, nor mainstream culture. Both of these powerful institutions have pushed complex modes of thinking and being to the margins of normative knowledge and behaviour, without ascribing any real value or worth to them.

So, maybe our ailing “culture of unsustainability” is what in theatre is referred to as the “suspension of disbelief” – the ability to turn off *our* critical faculty, so that we may be entertained by cathartic stories of fiction? For here, I believe is the real issue, the reality of unsustainability; and it is embedded in how our society is educated to think. Just as athletes train their muscles to perform certain activities in particular ways, so too, we are coached to think about particular things in certain ways – it is a question of epistemology. When we see this process taking place in other cultures, we call it “indoctrination” and “brainwashing”, but of course in our own culture, it is considered to be “maintaining our values”, “heritage”, and “freedom”.

But this suppression of complex modes of thinking and creative being have harmful consequences for our individual and collective health. This denial of richness and diversity gives rise to a neurotic monoculture that has neutered social interaction in the name of progress and development. Manic consumerism, the fanaticism of the market economy and the cult of the individual ‘techno-sapien’ have actually increased our dependency and reduced our essential capacity for survival. Our catatonic reaction to climate change, the sixth extinction and other self-induced apocalyptic potentialities only sustain a suicidal status quo. Loss of this magnitude of ‘Reality’ would be diagnosed as certifiable in an individual, yet is promoted as normal at the global social scale. I suggest that it is through an integrated knowledge of complexity that we can find our true context for being.

Transdisciplinary Potential

Having embraced complexity, we are offered the potential for “transdisciplinarity”, and it may be useful to provide some contextualising definitions. I use the terms from Basarab Nicolescu’s book *Transdisciplinarity: Theory and Practice*, not those appropriated and adapted for the market of myth and management training.

Multidisciplinarity concerns studying a research topic not in just one discipline but in several at the same time. (Nicolescu, 2008: 2)

Interdisciplinarity has a different goal from multidisciplinarity. It concerns the transfer of methods from one discipline to another. (Nicolescu, 2008: 2)

As the prefix “trans” indicates, transdisciplinarity concerns that which is at once between the disciplines, across the different disciplines, and beyond all disciplines. (Nicolescu, 2008: 2)

While the emergence of transdisciplinarity may be the means by which art realises its potential as a diverse, complex system of becoming, the possibility of creating such conditions requires an essential shift in thinking, indeed it may require a shift in paradigm. A strategy proposed by the preeminent ecological artists Helen Mayer Harrison and Newton Harrison suggests that the effective deployment of ecological art may both require and generate “post-disciplinarity”. Here, all disciplines meet at a conceptual round table – all are present, all are equal. Art, like all other disciplines, must be valued equally. At the centre of the table we place the challenges of the 21st Century. These, The Harrisons call the “ennobling problems” - though I prefer the term, “ennobling questions”. Why “ennobling”? Because approached in this way, these challenges have the potential to liberate thought and action, and thereby potentially change the thoughts and actions that created them in the first place, by “turning the face of disaster to the face of opportunity”, as The Harrisons put it (Mayer Harrison & Harrison, 2008: 3).

I argue that this shift in thinking - from art as a thing, to a “creative process” conceptually focuses on ecology, the process of living. So what does art bring to the table? Well, keeping the notion of *rta* in mind, if we consider art to be a verb, rather than a noun, then we may enlist the human enactment of art, or the inherent processes of artfulness. Social scientist, Hans Dieleman, refers to “artful knowing/doing”:

Some of the competencies presented look like the “skills” we usually refer to, as they are action oriented. But these competencies are not to **apply** knowledge, but to **acquire** knowing and understanding. Moreover, the knowing is not in terms of analytical or theoretical knowledge or practical information, but in terms of symbolic meaning, metaphors, visions or images and experiences, integrating cognitive knowing, emotions and values. One more major difference lies in the activity of inquiry: the shaping, forming, constructing, mimicking or manipulating of reality through engaging in activities such as painting, sculpture, performances, installations, literature, music, theatre and the like. (Dieleman, 2010: 6).

Basarab Nicolescu provides the three postulates for the founding of transdisciplinary methodology:

- There are in Nature and in our knowledge of Nature, different levels of Reality and, correspondingly, different levels of perception.
- The passage from one level of Reality to another is insured by the logic of the included middle.

- The structure of the totality of levels of Reality or perception is a complex structure: every level is what it is because all the levels exist at the same time. (Nicolescu, 2008: 10)

This notion of multiple Realities is not some mystical fantasy, but firmly based on quantum physics and classical physics – together! The issue, however, is how this Reality has been suppressed and the consequences of this denial on our physical, mental, social and ecological health. Perhaps, one way of opening-up, bringing to light and exploring this potentially rich and exciting form of being in the world is our ability to question. That is to say the capability to creatively form searching, meaningful questions. Arne Naes, the founder of the Deep Ecology Movement adds:

“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. (Capra, 1996: 7)

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. (Capra, 1996: 8)

Question-based Learning

Now let us consider a concept I have been developing, “question based learning” (QBL). When it’s practiced intuitively by many artists and creative people, this approach may open 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, deeper learning, rather than solutions. This is potentially an ecological approach to learning – eco-pedagogy, or “Eco Literacy” (Capra 1999) - generated by context, relationships and complex systems, that include analytical methods of understanding the world.

Above all, QBL promotes questions that are feedback loops of creativity and expansive knowledge - resonating with the image of *rta*, or art mentioned earlier. Knowledge, then becomes an ‘open system’ that 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 and dynamic, or ecological. Nicolescu writes:

It is only if we question the space between, across, and beyond disciplines that we have a chance to establish links between *the* two post-modern cultures, integrating both science and wisdom. Transdisciplinary Knowledge is able to bring a new vision, not only of academic disciplines but also of cultures, religions, and spiritual traditions. (Nicolescu, 2008: 14)

And, I would argue that Transdisciplinary Knowledge, liberated through a capacity for questioning, is in itself a creative and healthy way of living that connects the whole of our lived experience. This, in turn, as Nicolescu further comments, has profound ethical and moral consequences.

Transdisciplinarity Knowledge, TK, corresponds to a new type of knowledge – *in vivo* knowledge. This new knowledge is concerned with the correspondence between the external world of the Object and the internal world of the Subject. By definition, the TK knowledge includes a system of values. (Nicolescu, 2008; 3).

Seeing is Believing

From 2000, I created a series of artworks and texts that considered the language and culture of science in relation to water, climate change and evolution. Titled, *species nova* [to see anew] (Haley, 2000), the works explored patterns of human behaviour based on normative beliefs emanating from scientific practice. The arts-led, practice-based research process revealed forms of social psychosis or loss of contact with reality, embedded in the embedded scientific belief systems.

The suffix “*species nova*” is ascribed by scientists to the name of a new bacterium, prior to the confirmation of its existence (sighting) by the international journals. The word “species” means “to look” and it means “a class of things, living organisms capable of exchanging genes, classified as a taxonomic rank below a genus and denoted by a Latin binomial.” It, also, refers to “the visible form of each of the elements of consecrated bread and wine in the Eucharist.” And “nova” means the mistaken sighting of a new star, a flash of brightness that quickly dims - feminine of novas - novel a new kind of nature; strange; previously unknown; novelty - invention. Two words that separately and together evoke belief systems that depend on visual experience.

As a poetic metaphor, I use the term to denote the potential for understanding a new order and evolutionary change – “to see anew”. However, I am aware that *species nova* could mean a mistaken religious experience, or a class of living things that flashed brightly and quickly dimmed. Uncertainty is embedded in the richness of meanings, far from the determinism of scientific truth. And so, the artistic questioning of a scientific assertion of taxonomic rigor provoked the creation of a performed installation and poetic texts for the seminal international conference, “Between Nature” (2000) at Lancaster University, when scientists, philosophers, activists, visual and performance artists met to reconsider the world and the disciplines they inhabit.

The term “*nova species*”, however, is derived from Roman Law and refers to the “specification” and naming of things in the right to ownership. In particular it refers to the change or transformation of something into another thing – something new. For instance, this could mean the change of cloth into a coat, metal into a statue, or eggs into chickens. To see and name the change denoted the difference; however philosophies changed from the Stoics who gave preference to the material, to the followers of Aristotle who favoured form.

In my use of the word species, I cheated and changed the meaning from “look” to “see”, as this suited my purpose at the time. Now, on reflection, I realize that this shift is more interesting than I first thought. Indeed we find ourselves with the Anglicized Chinese expression to “look-see”. As I understand it, the Chinese word equivalent means both to look and to see – two separate processes contained in one word - the act of looking from the observer to the object, and the process of receiving vision by the observer. So perhaps, “taking a look-see” provides a richer, more complete, understanding of the process, and denies separate objectification?

The difference between looking and seeing may, however, be “seen” and understood in terms of intension. Looking is the act of directing the gaze, viewing, often needing to be qualified, “look for something”, looking into, up, down, around. Whereas “seeing” denotes extra attention, the result of having looked is to “see”, to have gained knowledge, to understand, to be cognate.

In science, I believe this difference is understood in perception and cognition. In other words, our eyes do the mechanics of looking, as our brains turn what we see into understandable information. Seeing, seems to be about paying attention to the view at which we are looking, focusing on some aspect of interest; an object, a scene, another human. Seeing is recognizing – re-cognising, matching what we see to our memory of the world and verifying it constantly as one process.

Apparently for the first three weeks of life, babies see things up side down, as that is how the eye lens works. Then, to adjust to gravitational orientation, we learn to reverse the image received by our brain – an early adaptation to environmental embodiment, and a way of putting things into perspective.

Orientation in Perspective

Among the meanings of “perspective” are the art of drawing solid objects on a two-dimensional surface so as to give the right impression of relative positions and size, the apparent relation between visible objects as to position and distance, and a mental view of the relative importance of things. The word “perspective” is derived from medieval Latin *perspectiva*, from *perspicere* *perspect-* “look at closely, look through” (as *per-*, *specere* *spect-* “to look”)] ... and we find ourselves back at **species**.

“The way we depict space, determines what we do with it” (Hockney, 1984): The British artist, David Hockney’s phrase from a 1984, *Southbank Show* TV programme that described the influence of rectilinear perspective on Chinese art provided a clear insight into Cartesian thinking and its consequences.

The programme used two set shots. The first was Hockney as “talking head” with Canaletto’s painting of *A Regatta on the Grand Canal in Venice* (1740), to the right of his head. The other shot was from above, directly onto a large trestle table in front of him.

He used the table to unroll two Chinese scrolls of the Grand Canal from Beijing. Each scroll depicted the journey of an Emperor, one from the late 17th Century by Wang Hu, and a later scroll.

Hockney’s statement, “The way we depict space, determines what we do with it”, was repeated many times during the hour-long programme. The first half of which was spent looking at the earlier scroll that used a traditional form of Chinese perspective. While more akin to a flattened iconic space, this form displayed similarities with Cubist ways of seeing many facets of an object or view simultaneously. The corners of houses and streets shifted viewpoints to permit the viewer to see around corners, the inside and outside of buildings. The viewer was, therefore, given a privileged detailed view of daily life in action – street vendors selling their wares, a family eating, a pick-pocket at work, children at play, lovers caressing and a dog peeing. The convention of the canal journey revealed by the form of the scroll told a myriad of narratives and events.

Thus, the common fabric between the human, the living, and the Universe can be restored, which implies a complex conception capable at the same time to distinguish the human from the natural and to integrate it. (Morin 2005: 22)

By contrast the later scroll displayed a series of contained vistas, linked by a continuous horizon and the canal. The intimate details of life had given way to landscapes

of agricultural produce and anonymous workers. Hockney's statement gained poignancy, emphasising the influence of Western philosophy delivered through the European art canon on Chinese art and politics. While implicitly referencing Descartes' legacy on justifying European imperial policy, what we witnessed was a flattening or simplification of complexity. "The way we depict space, determines what we do with it."

Drawing on Life

I would now like to pay particular attention to drawing, or to be precise, drawing from life, or observational drawing. More than a skill involving "eye/hand coordination", drawing may be considered a cognitive process of critical observation and reflection, an iteration process and an embodied experiential knowing.

Meaning has to do with the way we function meaningfully in the world and make sense of it via bodily and imaginative structures. (Lakoff & Johnson, 1999: 78)

Lakoff & Johnson's notion of the embodied mind implies a complete integration of mental and physical activity. This may find resonance with the activity of drawing as a means of heightening cognition and even touch on human evolutionary development. This, in turn, suggests that drawing, through eye-hand coordination and the stimulation of parts of the brain that construct language, may lead to further understanding our embodied ecology - through drawing.

Perhaps, there is greater understanding to be derived from the language of drawing and drawing as a metaphor – to draw upon, draw together and to draft a proposal? Maps, diagrams and the drawings of architects and engineers provide utilitarian languages of science and technology, now appropriated by electronic and virtual data systems. And, of course, we must not forget the development of written forms themselves, derived from the hieroglyphs (picturing) of ancient civilizations.

The activities of observation, enquiry and exploration have lent heavily on the practice of drawing and in many disciplines, like botany, still do – the iterative process demands that we notice more, see more, pay more attention than the instant image of a photograph. The studies of Leonardo da Vinci still provide insights from an enquiring mind. Drawing as physical acts of engagement reveal verbs like pulling, pouring and drinking. Paul Klee took his line for a walk (Klee, 1989: 1). Rudolf Steiner, Albert Einstein, Tony Bezan and Joseph Beuys demonstrated, presented and performed through the act of drawing. When used by non-literate societies, drawing tells the story of the way we see things, as much as what we see – visual epistemology.

Drawing takes time. Drawing makes time and brings about reflection. Time to understand differences and relationships. Time to question. Perhaps, it is in Michel De Certeau's assertion, "Pay attention to the flow ... art is what attention makes with nature" (De Certeau, 1985: 17), that we find the transformation from observation to proposal to poesies. Drawing becomes self-reflexivity, and then visually engages the viewer so they too have to consider their own position. Drawing presents the possibility of new art forms – tracing the transition from one state to another. To create new visual metaphors, and make new knowledge. And when evolution 'draws' us into the future, we may understand climate change, the meaning and the potential of our embodied ecology - bringing ecology into sight.

Conclusion

As governments gradually admit to the scale of environmental and human degradation, and to the very real potential for the apocalyptic consequences of the global economy, how may this apply this ecological art? In 2007, the UK House of Commons Audit Committee responded to the 2005 UN Millennium Ecosystem Assessment:

The conclusions of the UN Millennium Ecosystem Assessment (MA) are clear. Human activity is fundamentally and extensively changing the world around us, leading to extinction on a massive scale. The extent of this loss should not be underestimated. It points to a sixth great extinction, on a par with historic global extinction episodes caused by asteroid impacts. (House of Commons Audit Committee, 2007: 3)

We consider that the logical conclusion of research to value ecosystem services and to identify those factors that actually improve human well-being, will be the development of an econometric that measures growth in a way that recognizes environmental limits and more accurately describes human well-being. Growth is, after all, not an end in itself. The Government must introduce an indicator of economic growth which incorporates the principles of sustainability and well-being as early as possible. (House of Commons Audit Committee, 2007: 5)

Let us, therefore consider the idea of “growth ecology” as a means to heal the whole. Much of our culture has been appropriated by the language of economics (e.g. “ecosystem services and products”), and sustainability has become synonymous with viability. It is perhaps time to reinvent our meaning and values of sustainability. A popular desire in market economics is “growth economy”, so a potential shift in thinking to a fundamentally sustainable culture could be “growth ecology”. I first coined the phrase in 2010 at an Asia-Europe Foundation conference in Brussels, when writing policy with a group of “creative” individuals, for a Summit of ASEM (Asia-Europe Meeting) on the subject of “Sustainable Creative Cities” – “to embrace ecological growth as social, environmental, cultural and economic diversity”.

“Growth ecology” may even suggest a proliferation of economic systems, as opposed to “growth economy” that only refers to Capitalist, monetarist, market economics - a monoculture in denial of ecology. However, “growth ecology” evokes evolutionary diversity, a principle of whole systems ecology that I would argue supersedes sustainability, or displays properties that emerge from sustainability to another level – a metaphor.

From the experientialist perspective, metaphor is a matter of *imaginative rationality*. It permits an understanding of one kind of experience in terms of another, creating coherences by virtue of imposing gestalts that are structured by natural dimensions of experience. New metaphors are capable of creating new understandings and, therefore, new realities. This should be obvious in the case of poetic metaphor, where language is the medium through which new conceptual metaphors are created. (Lakoff & Johnson, 1980: 235)

So, to conclude in a language of art and transdisciplinarity, a poem:

For the time being
Transformative memory
All in a lifetime

Forms of settlement
Another reality
Diverse forest

A flower waiting
Rain in a future desert
Knowing when to bloom

References

Alexander, C., Neis, H., Anninou, A., King, I. (1987). *A New Theory of Urban Design*. New York: Oxford University Press.

Bateson, G. (2000). *Steps to an Ecology of Mind*. Chicago: University of Chicago Press.

Capra, F. (1996). *The Web of Life: A New Synthesis of Mind and Matter*. London: HarperCollins.

----- (1999). *Eco Literacy: The Challenge for Education in the Next Century*. Liverpool Schumacher lectures 20 March 1999. California: Centre for Ecoliteracy, Berkley.

De Certeau, M. (1985). Pay Attention: To Make Art. In M. H. Harrison, & N. Harrison, *The Lagoon Cycle*, exhibition catalogue. New York: Ithaca.

Dieleman, H. (2010). Aritsic Rationality in Sustainability Projects: theory and practice. Summer School of Arts and Sciences for Sustainability in Social Transformation. Retrieved in 2011 from <http://assist2010.ning.com/profiles/blogs/hans-dieleman-artistic>

Gablik, S. (1992). *The Reenchantment of Art*. New York: Thames and Hudson.

Haley, D. (2000). *Seeking an Unacceptable Profile: species nova [to look anew] #1*. Performed arts/research installation, commissioned for Between Nature international symposium at Lancaster University.

----- (2001). 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* (pp. 97-112). Barcelona: University of Barcelona, CER POLIS, Spain. Retrieved in March, 2011, from www.ub.es/escult/1.htm

Haley, D. (2008). The Limits of Sustainability: The Art of Ecology. In S. Kagan and V. Kirchberg, (Eds.), *Sustainability: a new frontier for the arts and cultures*. Frankfurt, Germany: VAS-Verlag.

----- (2011). In S. Kagan, and K. Verstraete (Eds.), *Sustainable Creative Cities: the role of the arts in globalised urban contexts*, ASEF (Asia-Europe Foundation) (pp. 34-38, 44). Retrieved in 2011 from http://www.leuphana.de/fileadmin/user_upload/Forschungseinrichtungen/ikkk/kultursoziologie/files/ASEF_workshop_sustainable_creative_cities_long_report.pdf

----- (2011). Art & Grace. In W. Heim (Ed.), *New metaphors for sustainability: metaphors for the continuation of life*. The Ashden Directory. Retrieved in 2011 from http://www.ashdendirectory.org.uk/featuresView.asp?pageIdentifier=2011414_37524050
<http://ashdenizen.blogspot.com/2011/07/new-metaphors-for-sustainability-art.html>

Harrison, H. M. & Harrison, N. (2008). Public Culture and Sustainable Practices: Peninsula Europe from an ecodiversity perspective, posing questions to Complexity Scientists. *Structure and Dynamics: eJournal of Anthropological and Related Sciences*, Volume 2, Issue 3, 2008, Article 3. Retrieved from <http://repositories.cdlib.org/imbs/socdyn/sdeas/vol2/iss3/art3>

Hockney, D. (1984). *The South Bank Show*, London Weekend Television House of Commons Audit Committee. (2007) *The UN Millennium Ecosystems Assessment: First Report of Session 2006-07*. London: The Stationery Office Limited.

Klee, P. (1989). *The Pedagogical Sketchbook*. London: Faber and Faber.

Lakoff, G & Johnson, M. (1980). *Metaphors We Live*. Chicago: University of Chicago Press.

----- (1999). *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought*. New York: Basic Books.

Morin, E. (2005). Restricted Complexity, General Complexity. In Philpapers.org. Retrieved from <http://philpapers.org/rec/MORRCG>

----- (2008). *On Complexity*. New Jersey: Hampton Press Inc.

Nicolescu, B. (2008). *Transdisciplinarity: Theory and Practice*. New Jersey: Hampton Press Inc.

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