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Foregrounding ecosystems: thinking with the work of Helen Mayer Harrison and Newton Harrison.

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Figure Ground Reversal: The ecological epistemology of Helen Mayer Harrison and Newton Harrison

Chris Fremantle and Anne Douglas

Chapter for Imaginative Ecology: Humanities for Sustainable Societies

The Predicament of Mankind, the 1970 text from the Club of Rome, is one of the major attempts to re-think humanity's relationship with the planet. It defines the problem in the following terms,

“The source of our power lies in the extraordinary technological capital we have succeeded in accumulating and in propagating, and the all-pervasive analytic or positivistic methodologies which by shaping our minds as well as our sensibilities, have enabled us to do what we have done.” (5)

The text goes on to say,

“However, the experience of the past twenty or thirty years has shown with remarkable clarity that the issues which confront us in the immediate present, as well as their undecipherable consequences over time, may not too easily yield to the methods we have employed with such success in the bending of nature to our will.” (ibid)

This statement frames the ecological and planetary challenges we face as an epistemological issue i.e. in terms of knowledge and ways of understanding.

In what sense is the search for different ways of knowing still relevant? Although seriously questioned in the early 1970s, a positivist epistemology continues to be dominant and has led us to, for example to ecosystems services, attempting to quantify the supporting, regulating, provisioning and cultural services provided by nature to humans (UK Ecosystems Services Assessment 2011). This has evolved into the concept of ‘natural capital’ that begins to evaluate these services in monetary terms (Eftec 2015).

What might a different epistemology that is ecologically focused look like? What is the contribution of the arts and humanities, in particular the work of artists, in formulating different ways of knowing? The authors of this 1970 document argue that the analytic or positivistic methods that have underpinned the development of

industrialised society won't provide the means in the present and future to address the problems being created.

This challenge was also central to Gregory Bateson's analysis of dysfunctional ways of knowing from the perspective of psychoanalysis. He proposed that ecological health continued to elude because we had yet to evolve a single system in which human civilization and environment came together within a single complex whole as knowledge (347-8). For Bateson, ways of knowing needed to be based in much richer processes of perception, awe and recognition in our understandings of ecological complexity. Such processes would enable us to see the profound interdependence and connectedness of all living things and nature's non-linear pattern of events, as is emphasized by Mary Catherine Bateson in her 1999 'Foreword' to *Steps Towards an Ecology of Mind* (xi). Perception needed to go beyond the surface appearance of things, to recognize the pattern flow within reality, in particular the non-linear patterns of organic growth. This perception combined with knowledge and experience could lead to new learning particularly paying attention to feedback loops. Awe for Bateson was based in being able to perceive the complex interweaving of regular events in qualitative ways, a new form of epistemology that involved aesthetic experience. The collisions between the quantitative linearity of an industrial order and the relational, perceptual quality of ecological thinking were becoming increasingly more evident and problematic (Harries-Jones 159-163).

Picking up on the challenge articulated both by the Club of Rome and Bateson, we want to focus on the work of artists and what they might offer to an alternative epistemology capable of recognizing the patterns and processes underlying ecology. We are interested in exploring a particular practice – that of the artists Helen Mayer Harrison (1928-2018) and Newton Harrison (b 1932) (known as 'the Harrisons') to understand how this practice frames and develops ecological ways of knowing, in particular with reference to Bateson's characterisation of an epistemology based in perception, recognition and awe. We have selected the Harrisons' practice because it specifically attends to and evokes underlying ecological complexity and interaction, and is foundational in the field of art and ecology and therefore well tested in regional, national and global contexts (Kagan 283).¹ It is also provocative in terms of

¹ The authors have elsewhere addressed the Harrisons use of inconsistency and contradiction (2016 a.) and the poetics of their practice including their use of improvisation (2016 b). Douglas has addressed

knowledge, at times seeming to converge and at others apparently diverge from Bateson's approach.

The Harrisons: a brief introduction



Fig 1: Helen Mayer and Newton Harrison. *The Serpentine Lattice*, (installation view) 1993. Courtesy of the artist.

The Harrisons' work has developed over some 50 years as a partnership between two individuals. It engages two artistic traditions – the visual arts and literature. It is manifest in exhibitions comprising proposals for future ways of living, juxtaposed with current ecological collapse. It is driven by carefully framed questions that enable participants to judge what is important in a particular situation. This connects with Schön's idea of metaphor (1993) as the means to see from a different perspective and in this way to frame issues, pose questions rather than solve problems. It is context specific in as far as questions arise in particular situations and in specific experiences of environmental change. They present this meta-level of understanding to different publics through poetry and image, by telling a story that opens up a new vision. In both content and form the Harrisons test the boundaries of the visual arts and literature so that their art comes to exist in the world in ways that are different from

their contribution to sustainability (2016).

the artforms (as well as the sciences) on which they draw.

Around the same time as *The Predicament of Mankind* and *Steps to an Ecology of Mind*, the Harrisons made a decision to only create work that takes the perspective of and benefits the environment. They articulate this as “...the progression from an initial decision, made in '69-'70, to do no work that did not in some way look at ecosystemic well-being.” (2001 b. unpaginated). They position the human in relation to the lifeweb, drawing on Fritjof Capra’s definition of the ‘web of life’ as a conceptual framework that integrates life’s biological, cognitive and social dimensions towards developing a coherent, systemic approach, a science of sustainable life capable of addressing critical issues of our time (xii).

We will argue that the epistemology in the Harrisons’ work sharply puts into perspective the conflict between, on the one hand, fragmentation brought about through an economics based in commodification and, on the other, the interests of the commons. For the Harrisons, the commons are air, water, soil, and forests. These commons undergird the lifeweb and are most vulnerable in the conflict.

Bateson and ecological thinking

Like the Club of Rome’s paper, Bateson argues that the twentieth century is characterised by social/cultural pathologies of knowledge that result in irreversible impacts on the health of humans, other living things and the environment. These pathologies are characterized by habits of thinking that look to short-term solutions, maximizing single variables like profit over optimizing the relations between complex variables. Bateson describes how we are trapped in behaviors and values that even in his day were destroying the habitats in which we live and on which our lives depend. Pathologies can emerge as a consequence of simplifying forms of inquiry that trace ‘short trains of causality’ which can then be easily manipulated. In medicine, for example, cause and effect links in limited circumstances may provide sufficient knowledge for the effective use of drugs or other interventions, but at the same time these disrupt the ecology in unintended ways such as producing parasites immune to antibiotics (119). Bateson through an investigation of the patterns and processes of living systems proposes a new epistemology, one that locates the mind in relation to its environment i.e. does not separate the mind from its material base. Bateson’s epistemology focuses on the patterns, ideas and processes through which material

forms come into being i.e. not the forms themselves. This new epistemology is also aesthetic.

“So by aesthetic I mean responsive to the pattern that connects. The pattern which connects is a meta-pattern. It’s a pattern of patterns. It is that meta-pattern which defines that vast generalization that indeed it is patterns which connect.” (Bateson quoted in Harries-Jones 158)

An ecology of mind is a process in which thinking is an experience *in life* and in the imagination. We respond to information as an experience and (sometimes) self-correct our understandings through feedback loops. This, Bateson observes, is a characteristic of living systems from cells to forests, as well as of civilization; a way of knowing that is based in deep systems thinking (109-112).

Mark Engel in his Preface to *Steps to an Ecology of Mind* summarises Bateson’s view of the world as follows,

...we create the world that we perceive, not because there is no reality outside our heads, but because we select and edit the reality we see to conform to our beliefs about what sort of world we live in. ...Sometimes the dissonance between reality and false beliefs reaches a point when it becomes impossible to avoid the awareness that the world no longer makes sense. Only then is it possible for the mind to consider radically different ideas and perceptions. (6)

Bateson is in fact inviting us to question the self-imposed limitations of our imagination.

How might we do so?

The place of the imagination, metaphor and story telling

Bateson’s ‘steps to an ecology of mind’ offer a number of possibilities including the importance of diversity in maintaining flexibility and resilience, searching for basic continuities that support adaption and learning from change. He also emphasizes the importance of the story as a form of thought.²

² The idea of focusing critically on patterns of thought to nurture ecological understanding is not original to Bateson. Rudolf Steiner developed anthroposophy in Germany in the early 20th century as a philosophy and practice founded in respect for nature. Goethe, as artist and scientist some 150 years before, had already offered the idea that a human being was the finest instrument of observation. By training the body to acutely observe, by paying attention to the surrounding world, we become capable as human beings of forming relations to our environments that are supportive rather than destructive of

The Harrisons describe their approach in a way that is strikingly resonant with Bateson's observation about belief and reality above, saying,

Our work begins when we perceive an anomaly in the environment that is the result of opposing beliefs or contradictory metaphors. Moments when reality no longer appears seamless and the cost of belief has become outrageous offer the opportunity to create new spaces - first in the mind and thereafter in everyday life. (2006a)

The Harrisons offer a way of targeting 'dysfunctional' metaphors that emerge in the way we talk about the places we inhabit. By 'dysfunctional' they mean something close to Bateson's notion of pathologies of cultural construction. The Harrisons flip dysfunctional metaphors by identifying alternative ones that enable a fresh perspective.³ Their approach is steeped in story telling.

"We hold that every place is telling the story of its own becoming, which is another way of saying that it is continually creating its own history and we join that conversation of place."

(2001c 14)

The Harrisons not only see 'the pattern that connects,' but harness the aesthetics of pattern to position the lifeworld as foremost and humanity as part of it rather than separate from it. They describe this in terms of a reversal of a figure/ground relationship that draws simultaneously on the conventions of the visual arts (particularly through the work of Joseph Albers) while also drawing on the ways in

life (Shotter 2005, 151). Goethe formulated his position as a critical counterpoint to the way in which science was becoming harnessed to industrialisation for short-term goals.

Insofar as he makes use of his healthy senses, the human being is the greatest and most precise scientific instrument that can exist. And precisely this is the greatest disservice of modern science: that it has divorced the experiment from the human being, and wants to know nature only through that which is shown by instruments - indeed wants to limit and demonstrate Nature's capacities in this way. (Goethe quoted in Amrine 37-38)

Paul Klee, the Swiss German artist, musician and anthroposophist drew on Goethe's thinking to form his own approach within the visual arts. In his text *Ways of Studying Nature* Klee says, "For the artist dialogue with nature remains a *conditio sine qua non* (the most essential condition). The artist is human; himself nature; part of nature within natural space." (Klee 15). Klee worked with this idea in drawing and painting, saying in *Creative Confession*. "Art does not reproduce the visible; rather it makes visible." (Klee 7). Painting for Klee was a drawing out of human experience, not a process of representing or illustrating but a way to create life itself through highly tuned forms of observation and imagination.

³ This connects with Schön's idea of metaphor as the means to see from a different perspective and in this way to set problems rather than solve them. Goto-Collins explores their approach in these, Schön's terms in the context of *Serpentine Lattice* (68-69).

which scientists might draw pattern from data sets.

THEN

A NEW REVERSAL OF GROUND COMES INTO BEING

WHERE HUMAN ACTIVITY BECOMES A FIGURE

WITHIN AN ECOLOGICAL FIELD

AS SIMULTANEOUSLY THE ECOLOGY CEASES TO BE

AN EVER SHRINKING FIGURE

WITHIN THE FIELD OF HUMAN ACTIVITY (1993 5-6)

This reversal of thinking brings the deep patterns and processes of life to the fore, and repositions human interest as an element of a larger pattern.

The Serpentine Lattice (1993)

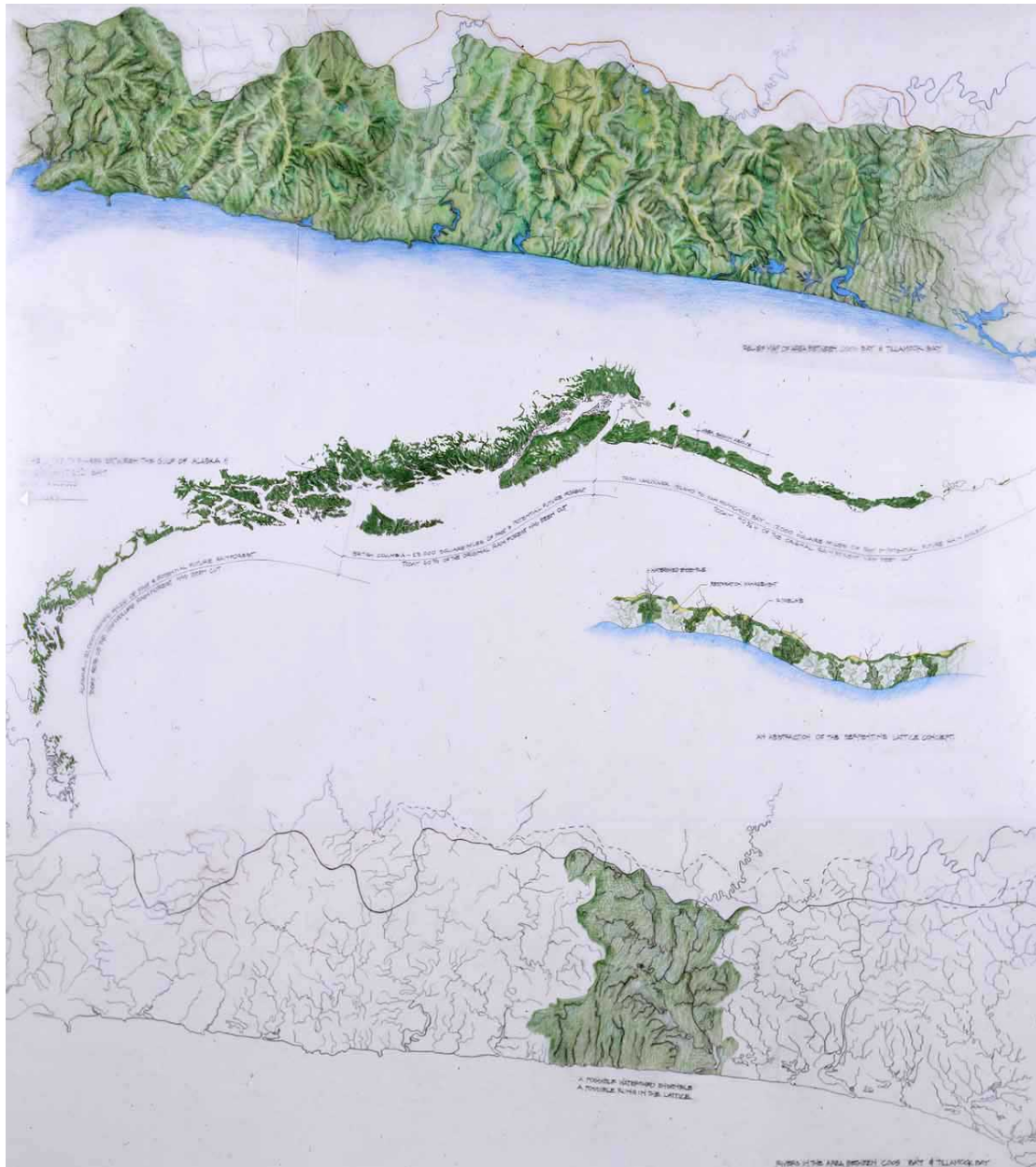


Fig 2: Helen Mayer Harrison and Newton Harrison. *The Serpentine Lattice*. Courtesy the artist.

The Harrisons' work, *The Serpentine Lattice*, from which the quote above is drawn, will function as a key point of reference in this essay. *The Serpentine Lattice* was made at the invitation of Susan Fillin-Yeh, the then Director of the Douglas M Cooley Memorial Gallery, Reed College in Portland Oregon. It investigated the landscape of the temperate rainforest of the area including the effects of the lumber industry. It was created at a time of increasing awareness of and activism in defence of the forest. It exemplifies clearly how the Harrisons deploy visual and literary metaphor to create a reading of ecological issues. Metaphor becomes a means of positioning these issues within a whole systems approach, reading deeper patterns of ecological damage by

taking the perspective of the environment rather than that of human self-interest.

There are several ways metaphor is operating in *The Serpentine Lattice*,

WE
BEING GRATEFUL
FOR THE INVITATION TO JOIN THIS PERILOUS CONVERSATION
BEGAN TO IMAGINE AN ACT OF RESTITUTION
YOU SEEING A SERPENTINE
I SEEING A LATTICE
WE BEGINNING TO IMAGE NORTH/SOUTH CONTINUITIES
FROM YAKUTAT BAY
TO SAN FRANCISCO
CONTINUITIES THAT WOULD BESPEAK
THE ECO-POETICS OF THE WHOLE
ONCE INTERRUPTIONS IN THE FOREST CANOPY
WERE ANOMALIES
NOW SUCH INTERRUPTIONS
AS CLEAR CUTS
AND TREE FARMS
AND ROADS
AND OTHER ARTEFACTS OF CIVILISATION
HAVE BECOME A NEW NORM
AND THE RARE INTACT CANOPIES OF OLD GROWTH
HAVE BECOME THE ANOMALIES
WITHIN THE MANAGED FOREST
AN UNFORTUNATE REVERSAL OF GROUND. (4)

The Harrisons use the metaphor of joining a conversation as a way to position the art in relation to the on-going life of the place. They use two voices to open up alternative readings of place. This articulates their relationship to the pattern as well as the important elements of the pattern. The landform of this region is serpentine in shape. Logging has consumed huge swathes of what had been the largest temperate rain forest in the world, suggesting a lattice of interruptions. By drawing these together in a single metaphor – the serpentine lattice – it becomes possible to imagine the area as

a whole ecosystem and to challenge, if not reverse, the trajectory in which forest was increasingly becoming an anomaly and the industrial extraction the norm. We grasp the destruction (in Bateson's term the 'pathology') at work across different understandings of value: the artefacts of civilisation in the form of clear cuts, roads and tree farms 'disrupt' and effectively displace what once was the continuity in the form of canopies of old growth to the degree that these have become the anomalies within a new system.

The poetry and image is performative, creating a quality of encounter that is distinctive. It forces us not only to see the internal patterning of an ecology but also to understand how this different way of seeing is itself constructed, through rhythm, skill and in material form. Bateson argues that one of most important characteristics of art is exactly this: art simultaneously offers an experience, a combination of form and content, but also creates the awareness in the viewer/audience that that experience is constructed (110).

The Harrisons enable us to imagine how the human is nested into the ecological rather than the ecological simply being an issue for the human. This is apparently oppositional to the anthropocentric (self-interested) thinking that underpins current national and international policy. The Harrisons' focus is to pay attention to the ongoingness of life itself, to derive ways of thinking from the complexity of the lifeworld, to confront that ever-present tension within Western thought between intuitive and analytic ways of knowing.



Fig 3: Helen Mayer and Newton Harrison. *The Serpentine Lattice*, (detail) 1993. Courtesy of the artist. (Original photographs: Trygve Steen)

Through this imaginary they construct proposals that are responsive to the complexity of the lifeweb even in its damaged state. These proposals aim to change our way of thinking rather than fix problems. In fact, most often the basic proposal is to stop acting in destructive ways and allow the lifeweb to heal itself. Intervention may be necessary in specific circumstances, but getting out of the way is also important. To draw from *The Serpentine Lattice* again,

THEN

WITHIN THIS LATTICE COULD BEGIN

THE RESTORATION OF THE MORE PRISTINE ENVIRONMENTS

BY LEAVING THEM ALONE

BY ENGAGING IN MORE ACTIVE RESTORATION

ONLY

WHERE CLEAR CUTTING HAD BEEN MOST SEVERE

BY CLOSING OFF ENTRY ROADS

WHEN FINISHED

A WILFUL GETTING OUT OF THE WAY

A FELICITOUS WITHDRAWAL (5)

The text puts the recognition of the fundamental ‘pattern’ first: that the lifeweb will restore itself if left alone. Intervention should be shaped and moderated by that understanding.

The use of propositional form in the work is significant in opening up an invitation to imagine the world ‘as if’, rather than ‘as is’, indeterminate rather than determined. The propositional is also an invitation to test or verify the correctness, to see knowledge of any kind as relative to ways of knowing at a specific point in time and context. Susan Fillin-Yeh quotes Newton Harrison in her essay for *The Serpentine Lattice* saying, “In the context of the art world, our works do, in fact, behave like works of art. When they’re exhibited at City Hall, however, they read as workable proposals in poetic form.” (17). By toggling between scales and between contexts of art and usefulness, this work builds capacity to function in a complex way across domains of knowledge, institutions and organisations and diverse practices without losing identity as the work of art. Being and knowing are entangled together. The practice of the Harrisons does not follow the canonical in either the visual arts or in literature, but synthetically draws what it needs from both artforms. It also draws what it needs from other disciplines and communities of practice. This complexity characterises their approach. They combine reason and feeling while exercising the right to question what might appear self-evident in information exchange by pointing to what Bateson describes as, “...the mysterious polymorphic relations between *context* and *content*.” (124), the interleaving of many levels of information flow and interaction in an ongoing state of emergence.

The role of ethnopoetics

Bateson, as an anthropologist, studied non-industrialised societies and his epistemological arguments are informed by their eco-cultural modalities. The Harrisons, through their association with the ethnopoetics movement, also look to the role of poetry in non- and pre-industrial societies to expand the potential for different ways of knowing through the arts, and a different role for the arts in society.

Helen Mayer Harrison had had a lifelong interest in language, narration, storytelling, and the oral tradition. For her and others (Jerome Rothenberg and Gary Snyder, both poets and anthropologists) ethnopoetics highlights the transformative power of vision,

of spoken and performed storytelling, of ritual that engages a public in experiences of hearing and seeing what is normally not heard and not seen.⁴ Rothenberg and Snyder suggested that ethno-poetics in the early 70s in the USA was concerned with drawing together what had become fragmented in a heavily industrialised society. By exploring the poetry of non-industrialised cultures and their deeper levels of direct contact with the natural world, ethno-poetics set out to enrich understanding of what poetry might be in occidental industrialised nations (Snyder 2). Rothenberg writes, “The suspicion came to be that certain forms of poetry, like certain forms of artmaking, permeated traditional societies † that these largely religious forms not only resembled but had long since achieved what the new experimental poets & artists were then first setting out to do.” (1).⁵ Rothenberg stressed the transformative power of ritual, the importance of rhythm, of movement and of transformation to draw out the deep patterns which both Bateson and the Harrisons are emphasising.

Both Snyder and Rothenberg resonate with Bateson’s concern to reintroduce aesthetics as core to ecological sensibility and knowledge in terms of rhythm if not also ritual. Pre-industrial forms of art making, whether the poetry of Northwest American First Nation people (the Harrisons) or Balinese painting (Bateson), appeared respectively as capable of integrating different levels of communication.

This conjunction of poetry and ritual with its role in a different epistemology is also present in the Scottish context (where the authors live and work). In Scotland this goes by the name of Geopoetics and draws on the Celtic Bardic tradition that has, as writer and activist Alastair McIntosh argues, played a vital role in the renewal of rural communities in the Scottish Highlands. They are also the spiritual conduits of the people, opening up fresh channels within the mind and collective forms of consciousness, forming a kind of inner order from which the energies of the material world emerge (McIntosh 2017). For McIntosh poetry is not just the written word, it is a way for finding a different relationship with land. He says of this kind of poetry, ‘And by “true” art forms, I mean those that come from somewhere deeper than the ego – those that emerge from the collective levels of consciousness.’ (ibid). This is a form of storytelling that is very close to indigenous cultures where the re-telling of

⁴ In San Diego the Harrisons were close friends with David and Eleanor Antin and with Jerome and Diane Rothenberg, all important members of the movement.

⁵ † is a symbol used by Rothenberg

process is a means to communicating both knowledge and value.

The Harrisons' work establishes a set of principles framed by two important questions:

- What does knowledge mean to here?
- What opportunity does this knowledge shape?

We've already noted Bateson's emphasis on context, but the second question significantly expands the question of context by opening this up to possible future action. The Harrisons express the potential for action in the form of a proposition. In addition and in contrast to Bateson's focus in qualitative, they draw on the tools of quantification. So if the Harrisons' work sits broadly within a tradition of ecological thinking (Goethe, Steiner, Klee, Capra and Bateson), and more specifically draws on ethno-poetics (Rothenberg and Snyder), why do we find references to Gross National Product (GNP), descriptions of 'externalities', and proposals for raising taxes on water appearing in their works from the early 1990s onwards? This seems to be a gesture towards not displacing one epistemology with another, but acknowledging the potential for constructive ways of integrating the quantitative with the qualitative within a propositional form.⁶

We find GNP appearing in *The Serpentine Lattice* and it reappears in the *Peninsula Europe* works, I (2000-2003), II (2007), III (2008) as well as in *Greenhouse Britain* (2007-09).

In the passage below, *The Serpentine Lattice* asks us to see the health of the lifeweb as underlying the health of the economy, in fact as the underlying organisational requirement for the economy.

FOR INSTANCE

⁶ To try and understand this it is worth bearing in mind Gary Snyder's observation that an anthropologist should only engage in explaining another culture if they can explain their own culture's economics. Quoting Dr Jack Stauder, Snyder says, "...if you're going to be an anthropology teacher you should also be able to teach your students the dynamics of their own culture, at least in the critical area of understanding imperialism and capitalism. If you can't communicate that to your students, then you've got no business talking to them about the Xingu. If you can't explain the banking system, well, where are you?" (4)

IF THE GROSS NATIONAL PRODUCT
IS 5.7 TRILLION DOLLARS
AND
PRODUCING THE GROSS NATIONAL PRODUCT
IS THE OUTCOME OF EXPLOITING
THE GROSS NATIONAL ECOSYSTEM
AND
THE GROSS NATIONAL ECOSYSTEM
IS NOT INFINITELY RENEWABLE
THEN
IT IS NOT DIFFICULT
TO IMAGINE THE GROSS NATIONAL PRODUCT
SHRINKING
IN CONCERT WITH AN OVEREXPLOITED
LESS PRODUCTIVE
GROSS NATIONAL ECOSYSTEM
HOWEVER
IF
AS A FORM OF RECYCLING
WE TAKE 1%
OF OUR GROSS NATIONAL PRODUCT
AND ESTABLISH
AN ECO-SECURITY SYSTEM
NOT UNLIKE
OUR SOCIAL SECURITY SYSTEM
THEN
ROUGHLY 57 BILLION DOLLARS
BECOME AVAILABLE YEARLY
FOR RESTORATION/RECLAMATION (7)

The artwork proposes a new tax on the Gross National Product to pay for restoration and reclamation. How is this not just financialising the lifeweb in the positivist ways that Bateson is critical of?

The Harrisons integrate the financial way of seeing the world into their overall

perspective from the health of the lifeweb. Specifically, they draw out the problem of long term costs and energy debt in terms of timescale, not just impact.⁷

FOR INSTANCE
WHO WILL PAY THE LONG TERM COSTS
OF CHANGING WEATHER PATTERNS
AS THE MOISTURE RETAINING PROPERTIES
OF THE LARGER TREES
DISAPPEAR
AND THE CARBON SEQUESTERED BY THE GIANTS
IS RELEASED INTO THE ATMOSPHERE
AND THE OXYGEN REPLENISHING PROPERTIES
OF THE QUADRILLIONS OF LIVING NEEDLES
ARE SUBTRACTED
AND THE GRANDEUR
OF THE ANCIENT
FOREST SYSTEM OF THE GIANTS
DISAPPEARS

...

AFTER ALL
THIS LONG TERM ENERGY DEBT
COMES DUE
IN THE NEXT GENERATION
WITH THE TURNING OF TENS OF THOUSANDS OF SQUARE MILES
OF BIOLOGICALLY PRODUCTIVE LANDS
INTO FUNCTIONAL DESERTS
AND THE ELIMINATION
OF PRODUCTIVE ECOSYSTEMS
FROM OVER ONE HUNDRED THOUSAND MILES
OF RIVER-STREAM HABITAT
AND THE WATER PURIFYING PROPERTIES

⁷ This issue is now framed using the terminology of ‘externalities’, costs on a third party beyond a transaction. The clear-felling of the forest reducing the health of the river stream habitats reducing their water purifying functions as one of several examples in the text.

OF THE WETLANDS

DISAPPEAR (6-7)

What is particularly important about their framing of these externalities is the duration in the shape of a long term energy debt. This energy debt is coming due (we are after all functionally a generation on from the making of this work). In addition, the scale of the debt needs to be understood in terms of the hundreds and thousands of miles of river stream habitat not providing fresh water, or the quadrillions of needles not replenishing oxygen, i.e. not contributing to the lifeweb on which we and all living things depend.

In the intervening years the issue of externalities, and the wider development of environmental economics, has become better known and clearer. As noted earlier methods such as Ecosystems Services Assessment and Natural Capital Accounting have become increasingly mainstream.

The Harrisons make proposals for taxation as a means of addressing these externalities, intending to reinvest in the health of the lifeweb. In particular, in a later project, *Peninsula Europe*, we find the following:

You said, “think of the waters. About 1430 billion cubic meters of waters fall on the icon. At least a thousand billion flow downhill. The rest remains in the mountains because of percolation and evapo-transpiration. So we are looking at about a thousand billion cubic meters of water yearly.”

Then I said, “Everybody pays at least one DM [Deutsch Mark] and sometimes two or three times that downstream for clean water. So we are looking at a trans-peninsula expense pattern of perhaps 2 trillion DM yearly assuming all downhill flow is used at least once. As the gross transnational product appears to be about 16 trillion DM, a rough calculation suggests that a modest water tax of about 3/5th of a per cent would yield close to one hundred million DM a year. Projecting this over a 15 year period, that amount of money would go a long way to putting this system in place. Once in place the system would move to self-maintenance and therefore the costs would drop significantly.” Then you said, “It looks like a very modest water tax for the good of the whole.”
(2001a unpaginated)

This sequence – the positioning of GNP within the lifeweb, the framing of the scale of

externalities and the urgency of taking these into account as well as the proposals for taxation capable of addressing the health of the lifeweb, all form a coherent way to understand our own economics as part of ecological thinking. The Harrisons not only bring to the fore all the critical aspects of environmental economics, proposing instead of just extraction the introduction of feedback loops which ‘give back to the lifeweb.’ They do so in a way that is both comprehensible and poetic, while also unapologetically drawing our attention to crucial patterns of relationships and dynamics.

What does the Harrisons’ articulation of large-scale numeric/financial propositions achieve?

The Harrisons address this through art and its power to provoke the creative imagination of both artist and viewer/reader. They say, “Big figures were an empowering aid to thought, invention, improvisation, and play.” (2016 316).

In other places they talk about defining ‘a field of play’ as being the same as a painter defining the scope of the composition (2007). So their maps are compositions just on a different scale from most paintings. Their use of figures achieves the same function of composing at scale, creating an image of ecosystems that complement and adds a dimension to the maps in the experience of the viewer. The numbers are another means of creating images in the mind, and even of provoking new thinking through proposing new patterns of organisation between the ecological and the economic.

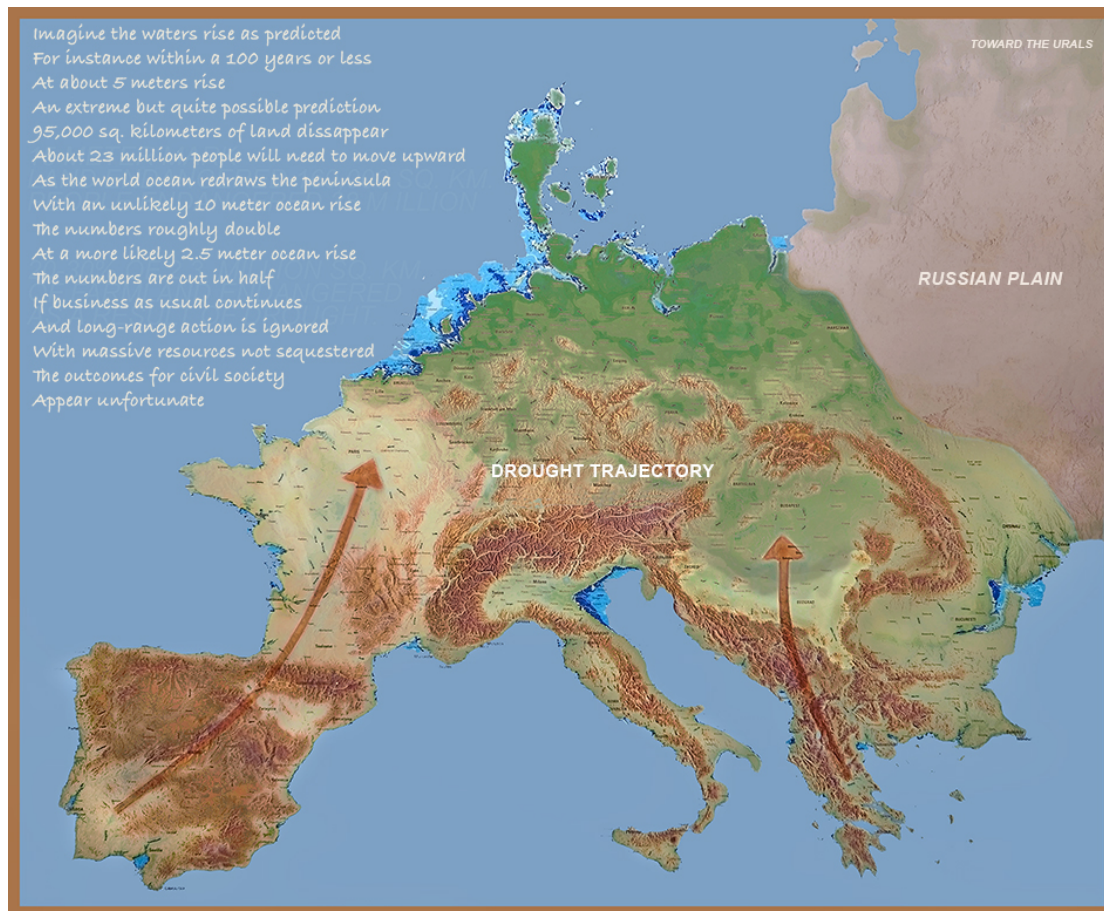


Fig 4: Helen Mayer Harrison and Newton Harrison. *Peninsula Europe II: Drought Trajectory*. Courtesy of the artist.

Moreover, just as they push back the human elements (roads) and bring forward the natural elements (rivers and mountains) in their creation of map images, the figures they select to focus our attention on construct scale and proportional relationships in the manner of design and architecture. These consist largely of areas of land, farmland, grassland, glacier, urban land or quantity of water, length of rivers and streams, amount of organic waste, creating a vivid image of value through the relation to total human Gross National Product. In addition, the numbers they use ask us to pay attention to the unity of the eco-system in contrast to commodification practices that use numbers to increase fragmentation for monetary profit. In the case of both *The Serpentine Lattice* and *Peninsula Europe*, their composition is at a transnational scale i.e. the scale of ecological pattern rather than of human political organisation. It is worth bearing in mind that the Harrisons start projects with the questions, ‘How big is here?’ and ‘How long is now?’ which ensures that the ‘field of play’ is in both dimensions not determined by existing political or economic assumptions.

If we consider the current frameworks used for economic valuation, this is often framed in three stages,

First, the way a decision will influence the environment needs to be understood (qualitative assessment). Second, the change in the environment and the related benefits need to be measured (quantitative assessment). Only then can the third step of valuation in monetary terms take place.

(Ozdemiroglu 5)

Interestingly, the Harrisons evoke all three of these elements: qualitative, quantitative and monetary. But their starting point with questions of scale and time ensure that the focus is not on the decision, but rather first on the lifeweb's integrity (so far as we can understand that). The significance of this point is further reinforced when we consider that the Valuing Nature Programme guidance assumes that, in answer to the question 'Whose values count?' that the scale can be national (8). The Harrisons always attend to the lifeweb scale (the temperate rainforest stretching from Yakutat Bay to San Francisco), rather than the political boundary (four different states - California, Oregon, Washington, and Alaska - in the US, and British Columbia and even part of the Yukon in Canada).⁸

Finally, the Harrisons' proposals, as we have shown in the examples of *The Serpentine Lattice* and *Peninsula Europe*, are focused on introducing new feedback loops in the first instance to the benefit of the lifeweb. The proposal for a tax on water made in Peninsula Europe (above) is to fund the restoration of the high grounds, increased forestry and biodiversity, which will in turn produce more clean water (and probably less flooding). The taxation is a mechanism to put back into the lifeweb from the process of extraction.

Moving to a conclusion

This essay opened with the Club of Rome and Bateson's critique of forms of epistemology that are increasingly damaging the global environment. The Club of Rome was a meeting between disciplines and international/global responsibility for governance in relation to the environment. Bateson's critique emerges out of the discipline of anthropology and is not new, but is threaded through Western thinking,

⁸ For further discussion of the difference between national scale interest and lifeweb interest in the context of *The Serpentine Lattice* see Goto-Collins 67

including philosophy, art and the natural sciences since the emergence of industrialisation. Bateson focuses on practices of quantification as a manifestation of a deep problem in the way the West imagines and acts upon human relations with the non-human world. In this he follows Henri Bergson.

In his *Introduction to Metaphysics* Bergson proposes two ways of knowing the world. The one moves around an object constructing a sense of the whole through partial views (e.g. through weighing and measuring), a form of analysis that through fragmentation attempts to understand the whole. The other, which uses intuition too, seeks to grasp an object from within itself and in its living mobile state. Any attempt to construct our sense of the whole by setting one concept against another, fragments our understanding and is an illusion, he argues. Bergson invites us instead to focus on movement and in this way to intuit the inner life of objects in the world through duration i.e. viewing life in the making, in a continuing process of formation and adaption.⁹ Measuring and weighing therefore conceptually entails stopping the world in its tracks, breaking continuity and movement, interrupting the mobility that is our natural state.

In the essay we propose that the arts, particularly as exemplified in the work of the Harrisons, can offer a different way of knowing that is distinctive and capable of addressing Bateson's call for a different epistemology shaped by attention to the underlying complexity of living systems. We explore this through the practice of the Harrisons whose work has pioneered a new field of inquiry linking the arts with ecology. We note that a practice is different from a discipline. It is entangled with the world, already part of the way life comes to be formed. It is not extracted from or applied in the way that knowledge is imagined in many discipline-based domains. This quality of relationship is resonant of Bateson's understanding of an ecologically focused epistemology. The connectivity of the mind is not limited by the skin, not confined to the interior of a living being but rather an embodied presence in a specific environment that transforms its surroundings through interaction (Bateson 326).

⁹ Bergson's extrapolation of these two ways of knowing is compelling:

“Let us, then, rather, imagine an infinitely small elastic body, contracted, if it were possible, to a mathematical point. Let this be drawn out gradually that from a point, comes a constantly lengthening line. Let us fix our attention not on the line as a line, but on the action by which it is traced... Finally, let us free ourselves from the space which underlies the movement in order to consider only the movement itself, the act of tension, or extension; in short, pure mobility. We shall have this time a more faithful image of our self in duration.” (26)

The Harrisons' particular approach and way of making art is important because it has evolved over fifty years. It demonstrates the potential for art to propose, evoke and make visible patterns, drawing attention to those that are dysfunctional, and offering others that respect the lifeweb. Their art has been tested in a significant number of cultural contexts and in relation to a rich diversity of environmental problems in specific locations. Importantly, it has taken a place at the table of other, conflicting public discourses and entered into dialogue with disciplines concerned with the environment, frequently acting as the pivotal point that draws such diversity of thinking together.

In conclusion we would like to draw attention to four key qualities of their approach that we have exemplified in the text and that arguably together offer the kind of radical epistemological shift that Bateson was seeking.

The Harrisons, like Bateson, position human beings as part of the lifeweb and this positioning underpins all their other proposals and revelations. Their most recent work, a cluster of projects in different parts of the world developed through *The Center for the Study of the Force Majeure* (2016 ongoing), goes further in suggesting that human beings can no longer assume a dominant, or controlling, position in relation to 'nature'. We can now only adapt because the consequences of human-induced environmental damage are so severe that the lifeweb is pushing back, becoming this 'force majeure', in the form of three interrelated elements: heatwave, sea level rise and biodiversity loss (6th Great Extinction).

The Harrisons draw us into this different way of knowing through their poetics, communicating complex ideas in ways that we not only recognise, but that also move us. They engage us in experiences that are affective – experiences of perception, recognition and awe. These are the characteristics through which Bateson defines a way of knowing that includes the aesthetic. Knowledge in this form is not information but formative of a way of being in the world and, in the case of the Harrisons, can lead to action.

There have been many arguments for sensory, entangled, holistic ways of knowing as a counterpoint to positivism. The scientist Donna Haraway, for example, draws on the arts and in particular literature, to explore thresholds, known as 'contact zones', between the human and the more-than-human (33). The arts are often positioned in

opposition to the ‘analytic and positivistic,’ but artists, including some at the forefront of thinking ecologically such as the Harrisons, have also used manifestations of the analytic and positivistic ways of knowing, what we might simplistically characterise as counting and measuring, within their works.¹⁰ The Harrisons’ work as artists, in contrast perhaps to Bateson’s position, does not displace such existing forms of knowledge. Instead they confront the implications of current forms of quantification in the way culture and society has used them, exposing the dangers of increased fragmentation and turning existing knowledge towards the development of common goals. They use quantification as a way to evoke patterns through techniques such as proportion and scale, to discern crucial differences and they propose ways that quantification can enable new feedback mechanisms. Specifically, they turn all forms of knowledge towards the overarching goal of giving back to the lifeworld more than we take.

Finally, ‘knowing’ in this way is mobile. It does not involve conceptually stopping time. For Bateson one of the significant dangers of industrialisation has been the loss of a sense of time as oscillation, the recursive time of organic life. Human beings have, he suggested, internalised the linear, quantifiable time of industrialised order in ways that are deeply embedded in daily life to the point that we have difficulty in extracting ourselves. We have come to believe that human beings can have control over events (Harries-Jones 165-6). In the Harrisons’ works they frequently speak of a moment in terms ranging from 10 years to 250 years (1994 3) i.e. extending well beyond the life or control of an individual. The Harrisons talk about ‘joining the conversation of a place’ and comment how ‘every place is a story of its own becoming’. Time in this construction is imagined as continuous and subject to rhythms. They talk about improvisation as a way of imagining cultural systems within ecological systems, as reflexive, unstable and fragile (1985 37 and 60) and they say, “...any central images that appeared seemed to exist only for a moment and thereafter

¹⁰ Other examples might include Duchamp’s *3 Standard Stoppages* (1913-14) or Hans Haacke’s 1971 piece *Shapolsky et al. Manhattan Real Estate Holdings, a Real-Time Social System*. Duchamp (1887-1968) configures the standard unit of a metre in three different ways, none of which are the conventional straight length, reminding us that measurement is a human construct that may be imposed as a way of standardizing the world imagined as controllable. Alternatively, the same measure may be experienced as unique and random when interacting with other complex forces such as relative weight and gravity (Wilkins 373). Haacke’s piece draws on data, the kind that might be associated with the social sciences and social policy to expose the inconsistencies between market requirements and the social needs of a disenfranchised community.

fade back into a pattern of moments grouped within moments.” (2001b unpaginated).

David Harvey, another anthropologist writing in the present, argues that the fourth of the ‘seventeen contradictions of capitalism’ is the privatisation of common goods, principally land, labour and money, three aspects of life that cannot be ‘owned’ by individuals but should be shared in common. Land is nature and not produced by people – it can be stewarded, but not owned. Labour, by which he means work, goes with life itself and is not for sale, even though it can be remunerated. Money is produced by a banking system governed by the state in the interest of the whole population, not of a few. The main driver of privatisation and fragmentation in capitalism is commodification, enabled by positivism’s counting and weighing, though not necessarily entailed by it. Harvey suggests that the current intensification of forms of privatisation are not only fundamentally fictitious but also highly damaging to society, robbing the protection previously afforded by public institutions. Privatisation is a form of appropriation and appropriation implies an act of taking something for one’s own use without permission. He shows the degree to which such practices have become normalised and how this is supported by poor public policy, saying, “Once land, labour and money had become objectified, pulverised and broken away from their embeddedness in broader flows of cultural life and living matter, then they could be resutured together under the constitutional rights and laws founded on principles of individual rights to private property.” (58)

This process is not only fictitious, but also needs to be recognised as illegal. Common resources that should not, and previously could not, be commodified and monetised such as gene sequences, seed banks, oceans through fishing rights and offshore renewable energy developments, weather futures, have now legally become ‘privatised’. It is the collusion of governments in developing policies enabling privatisation as the norm for short term gain that in Harvey’s view compromises our means to survive as humans.

The Harrisons’ work, alongside Bateson among others, exposes with startling clarity the depth to which we have sunk as human beings - the dangerous fictions that increasingly underpin the way we harness resources in support of humans with little care for the environment upon which we depend and the short term ‘wealth’ being enjoyed in a grossly inequitable way. It has to be said that many of the works we have cited were made in the 1990s and 2000s when structures such as the European Union

made it possible to imagine things like transnational watershed authorities which could introduce new feedback loops in the form of financial instruments. Today fragmentation seems much more dominant, ironically brought about by the financial crisis which in turn was caused by a banking system that had ceased to understand its role as a public good.

The Harrisons' current work addressing the 'force majeure' generates the hope that this trajectory may be changed by telling ourselves a different story, a story which reminds us of our deep and enduring connection to and dependence on the lifeweb as a whole; a story which urgently requires us to respect and adapt to the larger forces over which we have no control in a rapidly changing global context.

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