

EDUCATION FOR ECOLOGY: Science, aesthetics, spirit and ceremony

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Abstract

The crisis of sustainability is seen as a crisis of mind and thus a challenge for management education. Traditional educational methods are seen as inadequate even when they include radically different content. Gregory Bateson's critique of rational conscious purpose is explored to suggest that an appropriate form of education for ecological understanding will draw on aesthetics, grace and ceremony. An account of such education is offered.

Keywords: Management Education, Sustainability, Ecology, Gaia, Grace, Aesthetics, Sacred

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It is increasingly accepted that the activities of humans are fast overwhelming the self-regulating capacity of the planet of which we are a part. David King, Chief Scientific Advisor to the UK government has described climate change as the greatest challenge facing the world in the twenty-first century (King, 2004a, 2004b). More generally, Lester Brown writes

the economic policies that have yielded extraordinary growth in the world economy are the same ones that are destroying its support systems. (Brown, 2001:7)

What part can management education play in addressing this issue? While the economic and technical dimensions of this crisis are important, I join the environmental educator David Orr in believing that current educational forms are at the centre of our ecological problems. Orr argues that they tend to divide the world by academic discipline, advocate domination over nature, promote individualism and rights over citizenship and responsibility and separate rationality from feeling and valuing:

The crisis we face is first and foremost one of mind, perceptions, and values; hence, it is a challenge to those institutions presuming to shape minds, perceptions, and values. It is an educational challenge. More of the same kind of education can only make things worse. (Orr, 1994:27)

The MSc in Responsibility and Business Practice at the University of Bath seeks to address these educational challenges (see <http://www.bath.ac.uk/carpp/msc.htm>). It looks at the complex relationship between business decisions and their impact on local and world communities, economies and environment, and helps participants develop management practices that are responsive to pressures for greater awareness in these areas. Many people would like to bridge the gaps between their beliefs and hopes as human beings, and the reality of their working lives. This course aims to equip participants with the skills, knowledge and awareness to review their own practice and play an active part in moving organizations towards a more values-aware orientation.

Judi Marshall has described the educational design of this programme as ‘matching form to content’ (Marshall, 2004b). She argues that ‘pedagogy matters... that we need to develop educational forms that are robustly congruent with the issues addressed’ (2004b:197). Our pedagogy recognizes that there are no formulaic solutions to these issues; we invite participants to engage in active reflection and experimentation, and so become explorers and potentially pioneers in responsibility and business practice.

The programme is part-time and comprises eight intensive, five-day residential workshops over two years. Each workshop explores a content area in depth—the first two open the territory, looking at *Globalization and the new context of business* and *New economics*. The third workshop, described in this paper, explores the ecology of the planet of which business is a part; while the fourth brings participants back to the practices of *Sustainable corporate management*; in the second year workshops explore similar themes. We weave other, ongoing, strands of learning throughout the programme: systemic thinking, acting for change, power, gender, diversity and leadership.

These topics are contained by an educational model which we describe as ‘simultaneously appreciative’ and ‘question-posing’, which differentiates this programme from the few similar offerings (e.g. Pesonen, 2003). As Marshall points out

Objectivity is not an option, so we seek to offer participants frames and grounded practices from which to develop critical subjectivity and the capacities for continual learning. (Marshall, 2004b)

Our question-posing education is based on practices of action research (P. Reason, 2001b; P. Reason & Bradbury, 2001) inviting participants to develop skills of reflective practice (Marshall, 2001; Torbert, 2004a), co-operative inquiry (Heron & Reason, 2001), and large scale change (Gustavsen, 2001). For example, the programme is structured as cycles of action and reflection, with each workshop offering space for reflection in learning groups, and the periods between workshops as cycles of action. We bring into the classroom exercises which encourage reflective capabilities here-and-now—such as individual and group process reviews; and ‘tools’ to enhance off-line reflection such as the ‘learning pathways grid’ (Rudolph, Taylor, & Foldy, 2001). The assessment process encourages learning through inquiry. Maybe most important and challenging is our attempt as staff to model a practice of inquiry moment-to-moment in all our engagements with students (Marshall, 2004a; P. Reason, 2001c).

It is through this process of inquiry that our ideas and practices concerning the nature of an educational process to radically address the ecological crisis have arisen—we have effectively been through eight cycles of action and reflection over as many years. In this paper, I first briefly review some relatively traditional educational forms: we can offer evidence for the parlous the state of the planetary ecology; we can describe systemic models of eco-economy and natural capitalism which offer a different vision of human economy and its relation to planetary ecology; we can show how these models make sense in the context of systemic views of the planet, which leads to Gaia theory—a description of the planet as an intricate, self-regulating and self-organizing web of life.

However, the major purpose of this paper is to argue that traditional forms of teaching, ‘more of the same kind of education’, even with different content, will not bring about the change of mind required—they are necessary but not sufficient. Thus, the main body of this paper explores in some depth Gregory Bateson’s (1972) radical arguments about the dangers of conscious rational mind untempered by aesthetics, grace and the sacred. It is argued that these considerations lead to a different kind of educational process which integrates the aesthetic, emotional and spiritual with intellectual understanding.

Facts and Figures

One aspect of education for ecology is to present information about the state of the planet. Different authorities emphasize different aspects of the crisis, and this is not the place for a detailed presentation of the data, but it can be summarized in terms of

six global challenges: climate change, poverty, population, diminishing resources, pollution and species extinction².

The ecological footprint, a measure of humanity's use of renewable natural resources (Wackernagel et al., 1997), grew by 80 per cent between 1961 and 1999, to a level 20 per cent above the Earth's biological capacity: 'It is apparent that, since the 1980s, humanity has been running an ecological deficit with the Earth' (WWF, 2004:2-4). These challenges face us now; they are not in the distant future. They are not simply the concern of a fanatical fringe, but are broadly substantiated by a wide range of scientific and policy institutions. The evidence of impending crisis is accumulating; presenting data may shock and alarm but can produce paralysis rather than a change of mind (Kollmuss & Agyeman, 2002; Macy & Brown, 1998; Maiteny, 2002; Stern, 2000).

Ecological Economics

A second step in education for ecology is to present both a broad critique of economic theory (Daly & Farley, 2003; New Economics Foundation, 2004; Robertson, 1998) and specific proposals for more ecologically sound economic processes, such as 'ecology of commerce', 'natural step' and 'natural capitalism' (Brown, 2001; Hawken, 1993; Hawken, Lovins, & Lovins, 1999; Robèrt, 1997; Tibbs, 1993). At the heart of such proposals are production and distribution processes that stay within natural limits and integrate with and/or replicate the cyclical systems of natural ecologies. These issues must clearly be part of management education for sustainability, as Bradbury advocates (2003). Our MSc programme has a strong component of systemic thinking (Capra, 1983, 1996; Meadows et al., 2004; Senge, 1990; Senge, Kleiner, Roberts, Ross, & Smith, 1994). As well as being important in its own right, this points directly at the planetary system dynamics articulated in Gaia theory.

Gaia

The crisis of sustainability demands that we think again about the nature of our planet and the biosphere which sustains us. The modern worldview clearly distinguishes between rational, thinking humans and a non-human world devoid of intelligence, determined by 'chance and necessity' (Monod, 1972). But there is another view, Gaia theory, which sees planet Earth as a self-organizing whole, maybe a living being. Gaia theory derives from scientific inquiry into the systemic, interconnected nature of the planet—planetary systems science. It can also be seen symbolically (Ryland, 2000) as a rediscovery of *anima mundi*, the soul of the world. It is 'the next big idea', according to the philosopher Mary Midgley (2000; 2001), big enough to reunite science and spirituality, to give us an appreciation of how the Earth and her inhabitants matter for themselves, regardless of any use we humans might wish to put them to. So Gaia theory takes us directly into the tension between a scientific and a participatory worldview and raises the question of the type of mind change Orr is pointing toward.

² This is not the place for a detailed review of these issues. Information can be found in a wide variety of popular, scientific and policy publications (for example DTI, 2003; Hulme, Turnpenny, & Jenkins, 2002; Intergovernmental Panel on Climate Change, 2001; Meadows, Randers, & Dennis, 2004; UKCIP, 2002; United Nations Environment Programme, 2002; Worldwatch Institute, 1984-2004; WWF, 2004).

Gaia theory originates with James Lovelock's work for NASA in the 1960s. Lovelock—a Fellow of the Royal Society—was then known for his work on instrumentation, for example inventing the electron capture detector which demonstrated the build up of DDT in the biosphere and of fluorocarbons in the ozone layer. He was employed by NASA to develop equipment to be landed on Mars to detect the existence of life. As he considered this, he realized that one could tell whether there was life on Mars without sending a spaceship there, by looking at the chemical composition of planetary atmosphere. The Martian atmosphere is 95% carbon dioxide; while the Earth's is 21% oxygen and 77% nitrogen. So the Martian atmosphere is at chemical equilibrium—all possible chemical reactions have occurred; while the Earth's atmosphere is far from equilibrium with large quantities of oxygen, a highly interactive gas. Something is going on here on Earth other than chemical interaction to hold the atmosphere at this statistically improbable state. Lovelock concluded that it was the interaction between living things and the Earthly environment which not only made Earth's atmosphere but regulated it, keeping it at a composition favourable for life over billions of years.

In the 1960s and 70s this was far from the conventional view. The non-living world of rock, atmosphere and ocean were seen to determine key variables for life. Living things must adapt to these conditions or die.

Gaia theory proposes two radical departures from this conventional view. The first is that life profoundly affects the non-living environment, such as the composition of the atmosphere, and this then feeds back to influence the entirety of the living world. Gaia theorists talk about a 'tight coupling' between living and non-living worlds. The second proposal is that out of this tight coupling between life and non-life comes an unexpected property—the ability of Gaia, of the Earth system as a whole, to maintain key aspects of global environment, such as global temperature, at levels favourable for life, despite shocks and disturbances from both within and outside itself. (Harding, 2001:17)

Gaia is a way of describing Earth as an interconnected whole with emergent properties of self-regulation. We can take the long term carbon cycle as an example. Carbon dioxide pours out of volcanoes; since carbon dioxide is a greenhouse gas, if too much is accumulated the planet will get too hot. The Gaian self-regulating system locks up carbon at such a rate as to maintain temperature within appropriate limits for life. The weathering of granite rock allows calcium ions to escape and combine with rainfall and carbon dioxide in the atmosphere to make calcium bicarbonate. This is washed down to the sea and used by algae called coccolithophores to create their shells, which as they die sink to the seabed forming layers of chalk. So when you see the white cliffs of Dover you are looking at carbon deposits. And, extraordinary though it may seem, when you pick up a piece of granite rock you are holding something which participates directly in the processes of life on Earth.

When the planet's temperature increases, these chemical reactions speed up, so providing a feedback loop to increase the sequestering of carbon dioxide; and as temperature cools, the reactions slow down. But these physical and chemical reactions are insufficient to explain how temperature has stayed at a level suitable for life over eons. Life comes into the picture by increasing the weathering of rock in many ways, so that calcium ions are more available for linking with carbon—roots of

trees crack open rock, bacteria secrete compounds and lichens release acids—all of which accelerate chemical weathering, faster at higher temperatures, slower at lower temperatures, providing further self-regulating feedback. *Life participates fully in the creation and maintenance of its own environment.*

Although an oversimplification, this account is now generally accepted in the scientific community (see, for example, Kump, Kasting, & Crane, 1999). Earth science research has shown many other ways in which life processes are central to maintaining the steady state of Earth's temperatures and other essential qualities of the biosphere—these can be understood from a lay perspective in Lovelock's books (Lovelock, 1979, 1988, 1991, 2000) and Harding's articles in *Resurgence* (Harding, 1997, 2001, 2004); and in the scientific press (Charlson, Lovelock, Andrea, & Warren, 1987; Schwartzman, 1991, 1999; Volk, 1987). Gaia theory shows that there is an intimate and complex connection between life on Earth and the self-regulating properties of Gaia, that the whole planetary system is an intricate, self-sustaining and self-organising web of life.

So what is happening to this web of life, and in particular what is happening to the carbon cycle? We humans—actually, we humans in the industrialized North, but increasingly also those in the fast industrializing countries like China—through burning carbon fuels are releasing carbon which has been locked up for millennia; and there is increasing evidence that intensive agricultural activities in the majority world such as rice paddy fields emit large quantities of greenhouse gases. Simultaneously, we are damaging the planet's capacity for self-regulation by, for example, cutting down forests. As we pursue our short term interests we are cutting through self-regulatory cycles and causing an upsurge in planetary temperature with accompanying disturbances to the weather system.

Gaia, Science, and *Anima Mundi*

In Gaia theory, or planetary systems science, we have a coherent scientific account of the sustainability issue, well supported by detailed scientific study. Why, then, is it necessary to see Gaia theory also as a religious idea like *anima mundi* or symbolically as 'Gaia rising' (Ryland, 2000)? Why should we, with Midgley, want to reunite science and spirituality? It is because we have seen that education based on facts and figures, on alternative models of eco-economy, and even on a scientific understanding of planetary dynamics, is inadequate to respond fully to the challenge of Gaia and the destruction of ecological systems.

For as we teach this, we find several responses in our students: despair and depression; curiosity, wonder, excitement. Some students are delighted to understand a scientific account of their world; others angry this perspective is not more widely taught. There is always a lively response to these ideas. But some of the questions asked trouble us because they are of the kind which enables us to think *as if separate from the planet*. The following exchange adapted from a workshop discussion illustrates this. The question arises following a description of the feedback process through which Gaian temperature is regulated; it is not untypical.

Student: You said that the sun is forever getting hotter, so one day the feedback process that stabilizes climate will collapse anyway—that's the other point of view that someone could put.

Stephan Harding³: OK. But you know you're going to die one day. Does that mean you shouldn't enjoy good food, good wine, good books, walks in the country? Well it is the same with the Earth. The Earth is going to die eventually; it will die of overheating from the sun. That won't happen for another thousand million years, as far as we can tell. So we've got a thousand million years to go! In the meantime, let's enjoy life, just as we do with our own lifetimes...

Student: I understand. But some people will say, 'If it is all going to die, what does it matter if we put more CO₂ into the atmosphere?'

Harding: If you take that perspective, you're just abstracting yourself out of Gaia, looking at Gaia from outside. And we're not outside Gaia, we're *in* Gaia. The minute you feel you are *in* Gaia, then it feels it's worthwhile. This is one danger in presenting this theory, we get into an abstract relationship with it: we take some mathematical concepts and we draw the system on flatland [gesticulates at the figure on the board]. We put the system onto a flat board like this, and we look at it like gods from afar, detached from it. And then we can say, 'What does it matter if this happens or that happens?' We're not embedded, and that is the great danger with this kind of thinking. We have to be aware that these ideas are only useful if they embed us in the Earth. If we just leave these ideas in the thinking mind alone they are dangerous. We will say things like, 'What does the extinction spasm matter because we'll recover in 5 million years?'; 'Why bother because Gaia will die in the end?'... What I am trying to say is that we need to take this deeper: if we don't use this to fully embed ourselves in Gaia, it is not worth doing, it's counterproductive, we will get this detached perspective on Gaia. (Adapted from workshop September 2003)

Though this lively debate we realize that the problem with the scientific story on its own is that it takes us outside the system so that it objectifies our view. These kinds of questions—frequently asked—are informed, quite unconsciously, by a mindset that has its roots in the European Enlightenment.

The scientific worldview can be seen as being formed some 300-400 years ago. The medieval Christian worldview portrayed a world whose purpose was the glorification of a transcendental God. Bacon broke with this, making the link between knowledge and power, and told us to study nature empirically. Galileo told us that nature was open to our gaze if we understood it was written in the language of mathematics. Descartes' *cogito ergo sum* made a radical separation between human and other modes of being; and Newton formulated an extraordinarily powerful view essentially of the universe as a determinate machine obeying causal laws (see Skolimowski, 1994; Toulmin, 1990, 2001).

³ Stephan Harding is resident ecologist at Schumacher College.

This worldview channels our thinking in two important ways. It tells us the world is made of separate things. These objects of nature are composed of inert matter, operating according to causal laws. They have no subjectivity or intelligence, no intrinsic purpose or meaning. And it tells us that mind and physical reality are separate. Humans alone have the capacity for rational thought and action and for understanding and giving meaning to the world. This split between humanity and nature, and the arrogation of all mind to humans, is what Weber meant by the disenchantment of the world.

This disenchantment is exactly what Orr and other eco-philosophers are worrying about (eco-feminists have made a particularly important contribution to the debate, see Bigwood, 1993; S. Griffin, 1984; Mathews, 1991; Merchant, 1992, 1995; Plant, 1989). The really radical aspect of Gaia theory is not that it shows us how the planet, as a collection of objects, interacts in a curiously self-regulating way; but that it shows us how everything—including humans—participates in the processes of life on Earth. The human mind, certainly in its Western manifestation (Tarnas, 1991), has a strange capacity to see itself as autonomous and separate from its context: this both allows humans to ask probing questions of the universe; it also dangerously separates us from it. Thomas Berry, described recently as one of today's most probing thinkers on the human relationship with the natural world, puts it clearly: unless we understand the Earth not as a collection of objects, but as a 'community of subjects' in which we participate, we are unlikely to be able to make the change in perception needed:

If we don't have a sense of community, we won't have the psychic energy to carry [necessary changes] through. These ideas... will make demands on us. We will only be able to accept the demands if we have a psychic intimacy with the process that rewards us spiritually. (in P. Reason, 2001a:14; for other arguments for 'panpsychism' see D. R. Griffin, 1998; Mathews, 2003)

This takes us to Gregory Bateson's notion that there is something about the conscious rational human mind—what we in academia are proud to inculcate in our students—that is itself antipathetic to natural ecological processes.

Conscious Purpose versus Nature

In his essay *Conscious Purpose versus Nature* Bateson argued that the conscious, purposive human mind is necessarily damaging to the ecological whole (1972:426-439). An unspoiled natural ecology is made up of many creatures each of which has the capacity for exponential growth in population. The ecosystem's balance is maintained so that the diverse members live in intricate collaboration and competition and the complex whole of the ecology is dynamically stable.

Briefly, this balance is maintained through complex circuits of information which maintain the integrity of the whole, and can be understood as a form of Mind, mind not residing in any one entity, but immanent in and holding the wisdom of the whole:

The living beings of the world: viruses and bacteria, plants, insects, mammals (including humans), the great ecosystems, the seas, the atmosphere; all comprise a single interconnected *mental* system. Thus, radical interconnectedness is inescapable. (Charlton, 2003:116, original emphasis)

In contrast, Bateson argues that the human mind driven by conscious purpose separates itself from this wider Mind. He points out that ‘the *whole* of mind could not be reported in a *part* of the mind’ (1972:432, original emphasis) and therefore consciousness is *necessarily* limited. However, it is this limited consciousness that selects what is worth attending to—that which is relevant to conscious purposes:

If you allow purpose to organize that which comes under your conscious inspection, what you will get is a bag of tricks—some of them very valuable tricks...but we do not know two-penn’orth, really, about the total network systems... Wisdom I take to be the knowledge of the larger interactive system—that system which, if disturbed, is likely to generate exponential curves of change. (Bateson, 1972:433)

Consciousness as a ‘short-cut device to enable you to get quickly at what you want’ (1972:443), when coupled with powerful technology, cuts through the balancing circuits of Mind and undermines the ecosystem’s stability.

Bateson suggests that over-reliance on conscious purpose will lead to an attitude of hate toward the whole: not only will we see ourselves in competition with others, but, since our vision will be necessarily limited, we will be continually surprised and angered when our hard-headed choices return to plague us.

...mere purposive rationality unaided by phenomena such as art, religion, dream and the like, is necessarily pathogenic and destructive of life... its virulence springs specifically from the circumstances that life depends on interlocking circuits of contingency, while consciousness can see only such short arcs of such circuits as human consciousness may direct. (Bateson, 1972:146)

Bateson’s point is not that we must be nice to the environment, but that there is a *fundamental flaw in the way humans relate to the whole of which we are a part: a ‘pathology in epistemology’* (1972:478).

As his thinking progressed, Bateson became increasingly suspicious of linear and analytic ways of thinking that feed conscious purpose. He saw them as inhibiting the unconscious and recursive processes upon which all creative art and science depend. He uses the term ‘grace’ to point to the quality he was seeking, typically taking a word that has numinous but ambiguous meaning and employing it for his own purposes. He claims that aesthetic process is both ‘part of man’s quest for grace’ (1972:129) and a way of recognising and re-accessing the sacred. He pointed to the truth held metaphorically in art and sacrament, which cannot be consciously told: ‘...great art and religion and all the rest of it is about this secret, but knowing the secret in a conscious way would not give the knower control’ (1972:145).

[Bateson] can be seen as offering an account of how humans can and should *make* art and *live* aesthetically *within* nature, rather than merely a view of how individuals can relate to the beautiful in nature and in art-works...

... for Bateson, ‘the aesthetic’ and ‘the sacred’ became almost synonymous. In some of his later work he equates the aesthetic with the vast systems of the universe. For him, the outcome of ‘third-order learning’ can be something very like enlightenment.

It can reveal ‘a world in which personal identity merges into all the processes of relationship in some vast ecology or aesthetics of cosmic interaction’ (Bateson, 1972:306). (Charlton, 2003:114-115, original emphasis)

Above all Bateson wanted to find a way of accessing the lost sense of interconnectedness and intimate interdependency; and he calls this the recovery of ‘grace’, the sacred dimension of our being. He argued that artistic process, as both creative activity and active appreciation, is a tool for recovering the grace of embeddedness in the natural world. Art, because it is not subject to purposive, language-bound rationality, is capable of re-linking us with our context.

For Bateson, the “problem of grace” is one of integration (or re-integration) of the “diverse parts of the mind—especially those multiple levels of which one extreme is called ‘consciousness’ and the other the ‘unconscious’”. Bateson was fond of the famous words of Pascal: for grace to be achieved, “the reasons of the heart must be integrated with the reasons of the reason”. (Charlton, 2003:169)

Or as Bateson himself put it:

I do not know the remedy but there is this: that consciousness can be a little enlarged through the arts, poetry, music and the like. And through natural history. All those sides of life which our industrial civilisation tries to mock or put aside.

Never vote for a man who is neither a poet nor an artist nor a birdwatcher. (Bateson, 1967:10)

In his Introduction to *Mind and Nature: A necessary unity* (1979) Bateson rather cryptically quotes Wordsworth, whose character Peter Bly is blind to the beauty of the primrose:

A primrose by the river’s brim
A yellow primrose was to him;
And it was nothing more

Charlton explores this, asking, ‘When we see “*The primrose by the river’s brim...*” what do we really see?’ If aesthetically blind, we may see “*nothing more*”. Bateson claims that if we *do* see ‘something more’ aesthetically, then that is a recognition that the primrose itself is a mentally governed piece of morphogenesis: ‘*to experience an aesthetic response is to recognise a fellow mental process*’ (Charlton, 2003:197, emphasis added). This is one expression of Bateson’s intentionally ambiguous phrase ‘the pattern which connects’ (1979:11)⁴.

To borrow Charlton’s summary:

[Bateson’s] central insight was that active engagement within aesthetic processes can enable us to see beyond the “*purposive consciousness*” which has led us into ecological peril. Our conscious awareness is largely limited to the satisfaction of immediate desires by the most direct ways available. We have lost our access to the

⁴ Bateson’s writing is both rigorous and elusive. He draws on scientific and rational thought such as Whitehead and Russell’s theory of logical types; and where appropriate on poetry, metaphors such as ‘grace’ and phrases such as ‘the patterns which connects’ which point to a wider wisdom.

wisdom accrued in evolution and even to the greater part of the fruits of our personal experience. We have absorbed the societal beliefs and constructs which foster our illusions of supremacy, dominance, separation from the 'natural' world and immunity from the consequences of our ecosystemic ignorance. We have to come to believe that mind and mental activity only occurs significantly in relation to human brains, we think that 'mind' is a 'substance' divorced from the physical world and we perplex ourselves with the question of how it can interact even with our own physical bodies. We have lost, says Bateson, even that 'grace' which the animals still have: the more-than-conscious sense of our total dependence on the ecological systems within which we have been, so far, kept viable. One of Bateson's most penetrating insights is that when we are actively engaged with *any* element of beauty we are able to re-access much of the systemic wisdom that our total reliance on conscious thought and intention has overlaid and largely sealed off from us. (Charlton, 2003:225-226, original emphasis)

Educational Design

How then do we design an educational process which, while honouring scientific discoveries and the perspective they offer, acknowledges the dangers of separation and alienation that accompany them? How do we draw on aesthetic form in management education, let alone notions of sacrament? Can we design and conduct education as a 'recovery of grace'?

When we designed the MSc in Responsibility and Business Practice, we were adamant that students should study the planet's ecology, not just theoretically, but with experience on field trips; that the programme, while clearly a Masters programme in a prestigious business school, should attend to questions of meaning, value, spirit; and in particular that students should be exposed to radical thinking about the nature of Earth as the originator of all human and non-human wealth. From the beginning we wanted, as far as is possible in the overcrowded British Isles, to offer students an opportunity for a direct experience of the wildness of the natural world.

We therefore teamed up with colleagues at Schumacher College in Devon⁵, and particularly with resident ecologist Stephan Harding, to design a 'deep ecology' workshop, a week-long experience which explores the state of the world's natural ecology; includes lectures on deep ecology (Devall & Sessions, 1985; Naess, 1989; Seed, Macy, Fleming, & Naess, 1988) and Gaia theory; but where a lot of time is spent outside engaged in exercises designed to open an ecological awareness (for management education practices with similar intents, see Bradbury, 2003; Walck, 2003). We aim to understand our living world through ideas and propositions, and (since these are limited) *also* through a participative view, remembering Bateson's idea that we may recover the 'grace' of interconnectedness and intimate interdependency through metaphor, art, beauty...

The following dimensions make up our workshop design.

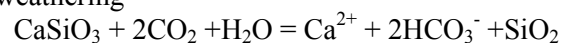
⁵ Schumacher College is an international centre for ecological studies offering a range of educational opportunities including short courses and an MSc in Holistic Science.
www.gn.apc.org/schumachercollege/

Schumacher College as a model of ecology. Schumacher College was founded in 1991 on the conviction that a new vision is needed for society and its relationship to the Earth. Much of its unique character comes from the College community each day creating an expression of a sustainable lifestyle. Alongside immersing themselves in course material, participants share in essential activities including cooking, cleaning, housekeeping and gardening. Food is vegetarian, primarily local, and delicious, demonstrating that one can eat well in manner which has light impact on the planet. The College environment creates a sense of the wholeness of life and provides the context for a deep and potentially transformative learning experience.

Education as Inquiry. The workshop is designed as an inquiry process, in which we invite participants to cycle between sessions where we explore ecological ideas about the world, and activities and exercises which invite them to open themselves to new experience of the natural world, often outside. This is based on the learning process associated with deep ecology where deep experience is seen as leading to deep questioning and thus to deep commitment to working for change (Harding, 1997; Naess, 1990). The workshop also draws on the extended epistemology of co-operative inquiry: as human persons we participate in and articulate our world through experiential, presentational, propositional and practical ways of knowing (Heron, 1996; Heron & Reason, 2001). We open spaces for *experiential knowing* through face-to-face encounter with the natural world, aided by deep ecology exercises intended to offer new perspectives and perceptions; we open to aesthetic imagery through verbal and non-verbal forms of *presentational knowing*—creative writing, drawing, poetry; we provide a wide range of *propositional knowing*, concepts and ideas which articulate the ecology of the planet; and draw on *practical knowing* in the more ecological rhythms of life in Schumacher College. The whole workshop is designed as a process of inquiry cycling through these four ways of knowing (Maughan & Reason, 2001).

Time spent outside. We start the workshop with a night walk in the local woods, inviting participants, as their primary visual means of orientation is denied or reduced, to open their other senses—touch, hearing, smell, intuition. We walk gently, pausing to listen to the owls and ravens, the dropping of water, the wind in the trees; and to the intrusion of man-made sounds, church bells and traffic. After talking about deep ecology we invite students to spend an afternoon sitting by the local River Dart, simply being with what is there—and they are often amazed at the richness and complexity of life they find. We spend a day walking down the upper reaches of the Dart as the river comes off the moor, fitting ourselves into the natural world: scrambling over rocks and under branches, helping each other through bogs and over torrential streams. We experiment with deep ecology exercises: imagining how the world we sense is also sensing us (Abram, 1996; Merleau-Ponty, 1962); guiding each other in pairs on a blindfolded experience of the trees, rock, and mud; identifying with beings in the natural world and exploring through imaginative meditation how we are part of Gaia's cycles.

Speaking an animist as well as scientific language. Stephan Harding's teaching of Gaia theory emphasizes its animist as well as its scientific qualities. While drawing on scientific knowledge, his language evokes a living world. He describes chemical formulae for rock weathering



while speaking of the elements as living beings with characters of their own. He will draw systems diagrams on the board while referring to the movement of *anima mundi*. And so on.

Art & poetry. As part of the reflection process we regularly use presentational forms such as creative writing and art work. The following are examples of haiku written by participants.

A seed grows.
Water gives it strength.
The Earth moves. (Linda Farrow)

Water drop on leaf
A tear rolls down for times lost
And new beginnings. (Ruth Townsley)

And on falling down in the woods:

A bramble catches
My ungainly fall;
Thank you, I say. (Ian Nicholson)

Ceremony. Midway through the week, following the teaching sessions on deep ecology and Gaia theory, we summon the Council of All Beings. Joanna Macy describes this as a means of ‘rejoining the natural world’ and remembering that ‘we are of this Earth, bone of its bone’ (Macy & Brown, 1998:149).

Participants first spend time outdoors finding a Being that ‘calls them’ to be represented in the Council. The Being may be great or small, present or distant: a spider or a drop of rain seen in the woods nearby; the Southern Ocean or the ‘brotherhood and sisterhood of laboratory animals’ seen through the imagination. They create a mask of this Being from paper, paints, and natural objects and speak as this Being in the Council, taking turns to describe the world as they experience it, and the impact the ‘two leggeds’ are having on their lives (for excellent descriptions see Macy & Brown, 1998; Seed et al., 1988).

I introduce the Council as a way of ‘being what it is you want to understand’, and thus recreating ‘the pattern which connects’, a way of re-embedding ourselves, through experience, in Gaia’s cycles. As facilitator, I approach the Council as ceremony: creating a sacred space—a circle with flowers and sacred objects on an ‘altar’ in the middle; calling the four elements and the ‘powers’ of the Earth’s four sacred directions (Storm, 1972), as a means to address the Earth and her beings as a community of subjects. I use a shamanic drumbeat to deepen the imaginative movement into the Beings we represent and to signal movement between the stages of the ceremony.

The Council experience brings laughter and tears, deep engagement and some embarrassment. Some find the ceremonial aspects liberating, a way of ‘being religious’ outside of established religions; others find it awkward or offensive to their beliefs; some manage to delightfully combine the two—for example by bringing St Francis’ *Canticle of the Creatures* to the Council. While quite unpredictable, the

Council is usually powerful: ‘It was as if we had just woken from a dream’, said one participant after we had taken our masks off.

What is the Council for all Beings? Is it an exercise, a ritual, a ceremony? Is it pagan, animist? Ecumenical? Or just a metaphor? I think its power lies in the ambiguity: people take it different ways, we love it, we hate it, we argue about it, and somehow in all this we may slip between worlds so that even for those who find it uncomfortable, something new may be opened. For some it may be a metaphor, for others a sacrament. ‘And which it is must be essentially “*secret*” - that is, it *cannot* be told, *cannot* be put into words’ (Charlton, 2003:158), which of course is just what Bateson was arguing for.

Student responses

This workshop is experienced as both deeply moving and challenging. Generally, it opens new perspectives on the world we live in. The fourth MSc group made a tape recording of their final inquiry cycle which formed the basis of a journal article. The following give some sense of the nature of the experience (the quotation marks indicate participants' actual words, taken from Maughan & Reason, 2001).

We found beauty in ‘the wonder and magic of nature’s complex cycles’. Through cycles of birth, death and re-use we became aware that ‘everything is related in one way or another’ and deep ecology provides us with an ‘understanding of the intimate relationships which exist and which we have with nature as well’. Our ‘connectedness to the rhythms of the natural world’ is something which our urban lives allow us to forget and the experience of deep ecology places us back within our most fundamental context: ‘we are nature’. One participant elaborated on this: ‘I thought the core experience was to actually feel myself as part of the natural world. I don't think we normally actually feel that’.

The integration of intellectual and intuitive understanding of ecological issues is illustrated in the following, taken from one student’s final project, showing how experiential understanding illuminates and deepens the intellectual; and the continuing impact the workshop can have in everyday life. After reviewing the experience of the workshop, he writes

Despite the unique quality of this week my key learning from this experience took place weeks later on seeing blossom on the trees that lined the streets of Islington as I walked back to the office from a meeting. I put together the ideas of the complexity scientists (Capra, Goodwin) and my direct experiences of the river Dart to really understand the blossom as an expression of systemic intelligence, or as Gregory Bateson might have said an ‘ecological mind’. As the weather got warmer in spring the blossom had appeared, connecting the tree to other species, insects, and to its environment in a way that was both an independent action of the tree and an interdependent function within its ecological context. I saw in this process Capra’s description of Varela’s analysis of the micro functions of cells as discrete entities that are open to outside influence or change. Influences that Bateson would call “ideas immanent in a network of causal pathways along which transforms of difference are conducted”, data about what was going on and ideas about how to respond. It made sense to think of the blossoms as the manifestation of ideas about the spring carried to the cells at the tips of the branches. It also made sense to see the tree in the same light as the cell—as an entity open to external information that made it able to be a part of

a larger system. I continued walking with a new sense of satisfaction in my relationship with the world.

Intriguingly this encounter took place in London where I live in relation to a tree planted in a hole in the pavement. It was an experience sparked by our time in Devon but it felt much more relevant and poignant in the city. (B. Reason, 2002)⁶

But what difference does all this make?

In bringing these ideas into management education, one must meet the ‘So what?’ challenge: Can any of this be applied to management practice? Or as one *Management Learning* reviewer asked, can this not be seen as ‘superficial or even silly, rather “new age”, without lasting results?’ Indeed, from a ‘managerialist’ perspective interested in immediate results this is probably so.

I cannot and do not want to claim that due to this workshop our participants return to their organizations and immediately start effecting startling changes toward sustainability. To do so would, in Bateson’s terms, over-value the conscious purposive mind. Nor can I claim to have systematically researched the kinds of transformational learning that I believe at least some students experience as a result of this workshop and where it is placed in the programme.

What we as staff have observed is that our students come to our course with a strong value orientation to making a difference around issues of sustainability and/or social justice. They usually have skills and knowledge in a particular dimension of the programme syllabus, and maybe thus a relatively narrow view of the ‘global problematic’ (Ekins, 1992) and of the role they hope to play in organizations. In the first two workshops they confront for the first time the scale, extent, and the economic, political, personal and spiritual dimensions of the challenge. Their sense of agency, the very idea that they can help create responsible business practices in a sustainable society, is often quite profoundly shaken—we would argue, appropriately so. Concurrently, they are building a community of inquiry and practice amongst their peers, a sense that they can trust themselves and their colleagues.

At its best, the Schumacher workshop addresses the intuition many participants have that there is a deeper level to these issues; they sense that, under the rhetoric of ‘corporate responsibility’, issues of sustainability demand individual and social transformation. This involves a radical shift in awareness and worldview—what Bateson describes as the shift from Learning I, in which learning is acquired from within an existing frame, to Learning II, which takes place through changing the frame (Bateson, 1972; Hawkins, 2004)—or even at times (and I write very cautiously) to Learning III, where there is a transcendence of the ego world and an experience of deep participation in the processes of the planet⁷. These transformational processes are currently being researched by colleagues at Bath (Ballard, in preparation, in press 2005; Gayá, in preparation).

⁶ Ben Reason is my elder son, who completed the MSc in 2003. He was not a member of a group for which I was primary tutor, and none of his work was assessed by me.

⁷ Such changes have also been described as double loop (Argyris, Putnam, & Smith, 1985) and triple loop learning (Torbert, 2004a).

So I would cautiously claim that to the extent that our students integrate the deeper learning possibilities of this workshop and indeed of the whole programme, their actions in organizations—which range from initiating new businesses based on fair trade and ecologically sound principles to impacting on the strategy of multinational corporations—are grounded in a deeper understanding of the place of business in the more-than-human world; that their actions for change in organizations are not simply ends in themselves but are part of far wider ‘ecology of mind’, to borrow again from Bateson. Bill Torbert, as external examiner for the degree, has described the best students as ‘living a closely textured inquiry that interweaves their personal actions and awareness, their organizational commitments and experiments, and their intellectual reading and theorizing, and... they succeed in communicating this living inquiry to a 3rd-person reader like myself’. He has described the course as ‘transformational social alchemy’ (Torbert, 2004b).

We have run this workshop on eight occasions, and each time the experience is subtly different, sometimes because of what we plan, and sometimes because Gaia speaks to us differently. The links between the workshop and Bateson’s notion of aesthetics, grace and the sacred have emerged over the years as we have sought to understand more deeply what we are trying to accomplish. Of course, we still don’t fully understand nor appreciate the challenges before us; this is necessarily a work in progress. As Bateson mischievously misquoted Browning:

A man’s reach must exceed his grasp
Or what’s a meta for? (in Brockman, 1977)

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