

Beyond Constructivism: A Goethean Approach to Environmental Education

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Introduction

Environmental education is only at a developmental stage, having originated in response to the environmental problems which have been most pressingly felt in the last thirty years or so. There is a general concern that we do not unconsciously carry into our new philosophies and methodologies the very dysfunctions which led to our environmental problems in the first place. Consequently there has been a search for paradigms of knowledge and enquiry which are adequate for the new problems that we face, paradigms which recognise the essential interrelatedness of all forms of life and the fact that enquirers are themselves *part* of environments, not just external observers as it is considered in classical rationalist science. The philosophy and method of critical evaluation which goes by the name 'constructivism' declares itself to be a way which can lead us beyond the mistakes of earlier theories of knowledge. I will be contending that, rather than being a way beyond rationalism and positivism, the constructivist approach is entirely bound up with that which it seeks to criticise, even if it assumes a radical posture. Out of this critique of constructivism and by way of the ideas of the German philosophers Friedrich Nietzsche and Martin Heidegger and the scientific methods of the poet and 'nature-philosopher' Johann von Goethe, I will adumbrate an approach to a new form of environmental education which I believe can satisfy our concern that the problems of the past are not perpetuated in a new guise.

Constructivism and Nihilism

The principal tenets of constructivism are traceable to the Kantian separation of the human subject and the unknowable 'thing-in-itself'. Kant believed that the 'truth' of the external world cannot be 'out there' in the objects; he came to doubt that we can know anything about the world directly even though our thinking may 'correspond' to it in some way. Modern constructivism has furthered this way of thinking and has concluded that 'knowledge' is nothing but a human construction, that 'existential reality' is simply the stories we tell to each other to suit different purposes.

As Noel Gough (1991, p.32) writes, the modern schools of thought known as 'structuralism' and 'poststructuralism' are concerned with revealing the 'constructedness' of the stories which make up our lives, the

fact that they are determined by our perceptual and social activity. The perceptual, cognitive aspect is emphasised by others (for example Guba & Lincoln, 1990; Maturana & Varela, 1987) who see knowledge as a personal construction, arising out of our subjectivity and structured by our physical organisation.¹ I will be using the term 'constructivism' in a general sense, embracing both the personal and social dimensions of this philosophy. In other words, I am considering constructivism as the style of thinking which defines knowledge as a human creation.²

My criticism will not be directed towards discussion of the obvious relationship between knowledge and human subjects in historical contexts; only towards the reductionistic tendency of constructivist thought, the implication that knowledge is *nothing but* 'a human construction', *nothing but* 'selected fictions'. These very terms betray the reductionistic character of this philosophy. For me this is reductionism in precisely the same sense as saying a person or a plant is *nothing but* a play of electrons and chemicals, only it makes the reduction at another level. Poststructuralists, for example, talk about human reality as *nothing but* a 'play of signifiers'. What appears absent in much constructivist thinking is an appreciation of the place and role of human cognition within the greater 'whole' which may be called Being, God, Nature, Tao or simply 'life'.³

Noel Gough (1991) bases his proposal for a new direction in environmental education upon a poststructuralist thesis (that is, he emphasises the social aspect of the construction of knowledge). He finds that many of the 'fictions' which are associated with positivist science and transmitted through the education system are 'unsustainable' and destructive to the environment. Gough focuses in particular on the 'fiction' that the earth is an object of instrumental value, merely a resource to fulfil our needs, and on the Western 'myth' of progress. The method he conceives for an environmental education is based on the mutual construction of new 'fictions' which are sustainable. The 'fiction' he recommends most strongly is that the world is a related whole in which we are 'intractably involved'. He is inspired to make this suggestion through observation of modes of living in Aboriginal culture connected with the Dreaming. While all this at first glance appears most laudable I will argue that Gough's proposal is inadequate to serve as a basis for an environmental education of the future.

In order to begin to justify this claim I would like to turn briefly to the beginnings of twentieth century culture, to the philosophy of Friedrich Nietzsche. It can readily be discerned how much constructivism has in common with Nietzsche's nihilism; indeed, it would seem that the terms 'constructivism' and 'nihilism' are quite interchangeable. Nietzsche accepted Kant's idea that things are unknowable 'in themselves' and arrived at the conclusion that reality is merely a composition of 'human perspectives'. In his *Will to Power* he wrote:

The subject alone is demonstrable; hypothesis that only subjects exist — that 'object' is only a kind of effect produced by a subject upon a subject — a *modus of the subject* (1967, p.307).

There exists neither 'spirit', nor reason, nor thinking, nor consciousness, nor soul, nor will, nor truth: all are fictions that are of no use (1967, p.266).

Nietzsche believed that, beyond the fictions of the human animal there is — nothing. He courageously took these ideas to their logical conclusion and was eventually forced to recognise something that David Hume had glimpsed a century before him; with the dissolution of the 'objective' world the 'self' is also threatened with annihilation — for might not the 'self' be just another fiction (Reinhardt 1960, p.108)?

Nietzsche's ideas, explosive and visionary by nature, were absorbed first into the underground of Western culture. Everywhere in the avant-garde art and philosophy of the first part of this century there is evidence of an 'existential encounter' with the 'nothingness'. And almost a century after Nietzsche's time such ideas become the basis for 'innovative' university courses and educational methods under new appellations such as 'constructivism' and 'poststructuralism' — now, however, with a much more friendly face and in a more palatable form. But this is pure nihilism; beneath the surface it is nihilism almost precisely as Nietzsche had conceived it. The point is that 'reality as fiction' is not an innovative, postmodern notion at all; it has been a significant formative idea within Western culture since at least the turn of last century and its roots go back much further. 'Modernism' could in one sense be defined as the attempt to come to terms with the nihilistic vision of the world.

Nietzsche encountered an abyss at the heart of Western culture. He rationalised that since he was no longer bound to any laws of nature or 'truths', these being only human fictions, he was absolutely free to make his own 'truths'. Since reality has no 'real' existence and thus provides no criteria for decision and action, he came to think that the necessity for human survival, the self-determined 'will to power', was all that was left in the face of the 'nothingness'. As Kurt Reinhardt (1960, p.110) has summarised it:

Aware of the fact that the so-called objective world harbours no objective values (the strongest ones) will then feel free to engage creatively in value projects of their own making, and in this way they will eventually learn how to dominate the world.

Where there are no 'true' points of reference beyond oneself, the only responsibility can be to oneself, to the fulfilment of one's own needs. For Nietzsche, the educating of strong, courageous and 'creative' individuals

becomes the *raison d'être* and most important goal of human society. Nietzsche's program is now being carried out, apparently unwittingly by some, under the banner of constructivism and articulated in such statements as the following:

What matters is not that these truths, these stories, match some reality, but that they work, that they serve their purpose — although often this purpose does not precede the story, but the story generates its role and purpose (Second of January Group 1986, p.23).

We have proposed a shift in ontology and epistemology that places humans at the centre of the enquiry process and defines them not simply as discoverers or receivers of knowledge but as its creators (Guba & Lincoln 1990, p.152).

If humanity is to survive, we must recognise that there is no outside from which to speak or act; we must gain a new normative matrix for the conception and production of the world. Survival is the one universal value that transcends the proclamation of difference (Fry & Willis 1989, p.231).

There is something extraordinarily alluring about this talk of absolute creative freedom, expressed in the catch phrase; 'The rationalists have only interpreted the world; the point is to invent it' (Second of January Group 1986, p.31). The modern arts have long since travelled down this path. The main danger, as I see it, as the 'new wave' of nihilism enters the environmental sciences, is that of self-contradiction.⁴ The exponents of constructivism proclaim it as innovative, anti-conservative, as a paradigm of enquiry most suited to address our environmental problems. But how can one say in the same breath that 'the objects, elements and meanings that constitute our "existential reality" are social constructions' and also that there is a 'global environmental crisis' (Gough 1991, pp.32-4)? How do we know that there *is* such a crisis; perhaps that too is just a fiction? Moreover there can be no real motivation for remedial action if we suspect that this crisis may be merely fictitious. And is it valid to make assertions about 'human interdependence' with nature (Gough 1991, p.36) unless it can be shown in what way such a statement is 'true'? For the constructivist the only thing that can be safely assumed about the idea of the 'interdependence of life' is that it is a fiction, albeit a very strong and useful one at a time when human survival appears to be in doubt. Constructivism cannot ever provide any 'real' criteria for improving the world, for protecting the environment. This gets to the heart of the matter — nihilistic 'freedom' necessarily revolves around *our* needs, *our* stories. What can I ever 'know' about the needs and potentialities of plants, rocks and animals? Even the seemingly indisputable notion of 'sustainability' appears as just another fiction which is going to prove useful for our

continuation (and potential domination of the planet?)

The methodology of constructivism harbours related problems and pitfalls. This methodology has been described as having two aspects: hermeneutics and dialectics (Guba & Lincoln 1990, p.146). The hermeneutic aspect consists of depicting and critically examining one's beliefs and assumptions (constructions) in any given social context. Another word often used here is 'reflexivity'. Thus far the process could be compared to Heidegger's deconstructionism, the meditative process of reflection upon and bringing into question the fundamental structures of one's thinking.⁵ The constructivist now engages in a dialectic process with others in a particular group, in order to collectively fashion a new construction which has a much consensus as possible and meets a particular need. But this is easier said than done, for there is no longer any such thing as 'truth' to guide one, only tenuous notions such as whether one construction is 'more sophisticated' than another (Guba & Lincoln 1990, p.147). Even if a momentary consensus is reached it can be immediately broken again in the reflexive process; there is never a 'true' position from which to act and one is suspended in an infinite regression of self-analysis. In this self-referential, fictional world no cognitive contact can ever *really* be made with entities in the environment; there is only the endless interplay of human stories. Within constructivist methodology there lurks Nietzsche's abyss. However, the danger is not so much the abyss as the fact that it is not *recognised*. Heidegger's insight into nihilism was that, while the deconstruction process opens up the mind to its own structures, it is the recognition and *experience* of the abyss which may be the occasion of a 'turning', an entering into a more 'essential thinking' or openness to the being of entities (Zimmerman 1990, p.220).

Constructivism, as a 'celebration' of subjectivity (Guba & Lincoln 1990, p.146), tries to found a methodology upon a nihilistic philosophy when in fact nihilism by its very nature can provide no such foundation.

'To The Things Themselves'⁶ — An Organic Conception of Knowledge

We come to the brink of the abyss — it is on all sides, it is within — there is nothing that can logically be done to resolve the situation. However if the abyss is faced directly it appears that a different kind of response is called for; Martin Heidegger (1969, p.32) has spoken of what is required as a 'leap' and 'letting go':

The spring leaps away, away from the habitual idea of man as the rational animal who in modern times has become a subject for his objects.

This is the self-release of the 'clench' of the rational mind which is always

analysing experience, trying to define itself over and against things and finally retreating into a 'celebration of subjectivity'. Heidegger describes the abyss of nihilism as something which at first threatens but which may be realised as a point of entry into a more authentic mode of being:

The abyss is neither empty nothingness nor murky confusion, but rather: the event of appropriation (1969, p.39).

A spring is needed in order to experience authentically the *belonging* together of man and Being. The spring is the abruptness of the unbridged entry into that belonging which alone can grant a towards-each-other of man and Being, and thus the constellation of the two. The spring is the abrupt entry into the realm from which man and Being have already reached each other in their active nature, since both are mutually appropriated, extended as a gift, one to the other. Only the entry into the realm of this mutual appropriation determines and defines the experience of thinking (1969, p.33).

These ideas are difficult because they are not directed to the analytical, representational mind. Heidegger is attempting to 'speak' out of another mode of cognition and uses a language which tends towards the poetical. A human, as a being, belongs with all non-human beings to the realm of Being, but the everydayness of habitual thought and prejudice can obscure that 'belonging-together' and render us oblivious to it. The 'leap' returns us to a more original, essential experience of our selves and other beings. By 'Being' Heidegger doesn't mean the metaphysical ground of things or 'seamlessness' beyond the 'illusion' of human thought.⁷ He means the 'intensive depth' of a phenomenon, the unity found *within* difference or differentiation (Heidegger, 1969; Bortoft 1986, p.49). It is out of the experience of the Being of beings that authentic language speaks.

The 'leap' brings us into the 'open' of a more essential, authentic relationship with things. We return 'to the things themselves', not through a motivation to know them in the sense of 'to explain' them, but from a solicitude which desires to preserve and 'guard' their essential being by allowing them to be disclosed in their own terms. This act of disclosure or 'unconcealing' is what Heidegger designates as 'truth', a primordial meaning of truth which has always been present in Western culture but has been obscured by the meaning which became dominant — 'truth as correctness', the correct correspondence of a concept to an objective reality (Heidegger 1971, pp.50-78; Heidegger 1992, p.256-273). Here we have something which shakes loose Gough's concept of existential reality as a composition of 'selected fictions'. In the terms in which Gough argues nothing could be said to dispute this, but the foregoing discussion has brought something else to light; namely, the potential of every person to enter an authentic mode of individualised being, to emerge from

dissolution in their cultural background of more or less fixed meanings and values. The latter is what Heidegger (1992, p.277) calls the condition of being 'lost in one's world'. As I will shortly describe, even the language in which one 'speaks' one's experience of things can come to be more authentic in the sense Heidegger uses the word.

Two centuries ago the German poet and natural scientist Goethe indicated an authentic way of investigating natural phenomena. Concerning the study of plants he wrote (Goethe 1988, p.11):

Like the sun which draws forth every plant and shines on all, [the true botanist] must look upon each plant with the same quiet gaze; he must find the measure for what he learns, the data for judgement, not in himself but in the sphere of what he observes.

Goethe's work in the sciences was extensive, particularly in the areas of colour research and plant and animal morphology. For a long time conventional science has not recognised Goethe's contribution, being as it is so completely at odds with the dominant rationalist paradigm. Goethe also said: 'Let us not seek for something behind the phenomena — they themselves are the theory' (Goethe 1988, p.307). His understanding of 'theory' is close to the original Greek *theoria* which means 'to behold something'. Thus, for Goethe, the 'theory' is not merely an intellectual abstraction or conceptual correspondence to a thing but the revelation or disclosure of the essential 'idea' of the thing through an intuitive mode of cognition (or 'thinking perception'). This is similar to what Heidegger (1992, p.51) meant when he defined the phenomenon as 'that which shows itself from itself'. Goethe did not think of the 'idea' as a rigid, divine 'law' or an absolute, unchanging principle upon which phenomena are modelled. He spoke of the 'idea' as something fluid and unfinished, at work *in* the phenomena; he was pointing to a generative, organic as opposed to a mechanical, causal principle of creation (Bertalanffy, 1951).

Goethe was concerned with disclosing the essence of a phenomenon, with learning how to perceive its shining forth in the visible aspect of the phenomenon. Kant, too, had recognised the significance of an intuitive mode of cognition which he called *intellectus archetypus*, the consciousness which apprehends the essential nature of a thing directly by proceeding 'from the whole to the parts' (Kant 1952, pp.63-4). While scientists sometimes speak of intuition as an inspirational flash, Goethe showed intuition to be an actual method of science, and the correct one for investigation of the organic realm (Steiner 1988[1], p.98).

Goethe was drawn to the tradition in philosophy which understands the world as a dynamic, organic whole, an idea usually associated with Plato. Aristotle also had an 'organic' world-conception; in *De Anima* he describes how reality exists potentially and only attains full existence when

it is known (just as a plant develops from a condition of potentiality in the seed to one of actuality in the adult); this view of knowledge was elaborated further by Aquinas and others in the Middle Ages (Barfield, 1965). These ancient organicist conceptions were reshaped in the philosophies of Bruno and Spinoza who inspired the so-called *Naturphilosophie* movement in eighteenth and nineteenth century German culture, of which Goethe was a part (along with philosophers Fichte, Schelling and Hegel and artists such as Caspar David Friedrich). *Naturphilosophie* embraced a participatory way of thinking which never presumed the radical separation of the human subject and the object-as-known. This tradition can be clearly distinguished from that of scientific rationalism which is best exemplified by the philosophy of Descartes who saw an irreconcilable division between mind (thinking substance or consciousness) and extended substance (bodies or objects). Rudolf Steiner, the first editor of Goethe's scientific works, has illustrated the organic conception of knowledge in the following way (1979, p.65):

Does not the world produce thinking in the heads of men with the same necessity as it produces blossoms on a plant? Plant a seed in the earth. It puts forth root and stem, it unfolds into leaves and blossoms. Set the plant before yourself. It connects itself, in your mind, with a definite concept. Why should this concept belong any less to the whole plant than leaf and blossom?

This is an understanding of the role of human cognition which implies a particular responsibility, as Henri Bortoft (1986[1], p.66) indicates:

The participatory view of the role of consciousness in knowledge is...an evolutionary view, in the widest sense, because the state of 'being known' is an evolutionary development of nature itself. When consciousness is properly prepared it becomes the medium in which the phenomenon itself comes into presence. We call this 'knowing the phenomenon', and understand it subjectively. But in a more comprehensive view it *is* the phenomenon itself which appears in consciousness when it is known. The act of knowing is an evolutionary development of the phenomenon and not just a subjective activity of man. This is the ontological significance of intuitive knowledge.

Such a conception of organic knowledge can provide, I believe, the basis for the development of an environmental education which can take us beyond the crisis of rationalism. Participatory knowing is truly holistic in that it experiences Being as the reality from which a human can never be separate. For Heidegger, even unauthentic, untruthful existence is still a

mode of Being-in-the-world (1992, pp.219-224). By contrast, a 'counterfeit' holism works with strategies such as trying to replace the unsustainable 'fiction' of separateness with another more holistic one (Gough 1991, pp.38-41). Here holism turns out to be nothing real or of inherent value, just a useful 'fiction'. The environmental education which I am advocating proceeds neither by the inculcation of objective 'facts', nor by giving subjectivity free rein. It highlights the human responsibility for all things belonging to nature and indicates ways in which that responsibility can be assumed.

Hermeneutics — 'Speaking' the Phenomena

Knowledge has no existence outside the language in which it is uttered; this is the essential insight of the modern philosophy of language and hermeneutics (the science of interpretation). As H.G. Gadamer (1979, p.432) has put it: 'being that can be understood is language'. In other words, a phenomenon cannot be understood prior to its articulation; we do not form a concept which we *then* articulate and communicate by means of language. The primary function of language is to 'disclose', to allow the phenomenon to come forth into view and the communicative function of language is secondary.

For the constructivist, our thinking and knowing is inextricably embedded in language which is our own creation. According to this way of thinking we may, however, attempt to adopt a mode of language which is more useful to us, which, for example, is more 'holistic' in nature. The organic conception of knowledge which I have been presenting defines the phenomenon as that which may become the revelation of Being; both Goethe and Heidegger recommend letting the thing 'speak' for itself in any phenomenological investigation. Yet if language is always interposing between us and the thing, this conception of knowledge would seem to count for nothing. The question is: can we ever really 'speak' the language of the thing itself, or is our utterance always destined to be a projection of ourselves, something which 'enframes' the phenomenon within our thinking no matter how innocently we approach it?

From the point of view of the organic conception of knowledge, such a 'speaking' of the thing is indeed possible but by no means a capacity which is 'given' us like the perceptual faculties we are born with or the language we unconsciously assimilate through our social development. Goethe (1988, p.307) spoke of a 'delicate empiricism', the capacity to 'see' or disclose the phenomena as its own theory, a 'thinking perception' which results from the *conscious development* of our perceptual faculties. Heidegger (1992, p.56) discusses the possibility of an authentic language which allows the phenomenon to 'show itself from itself'; for Heidegger the language which 'speaks' the Being of the thing is a more original (essential), poetic form of utterance although this is not limited to poetry

in the modern sense. He derives his meaning of poetry from the Greek *poiesis*, meaning to produce, to bring forth or disclose, a meaning which actually encompasses both art and technology (from *techne*, to make) (Zimmerman 1990, p.234). We are really only able to take hold of Heidegger's sense of language when we invert our habitual way of understanding the relationship of language to human consciousness:

For, strictly, it is language that speaks. Man first speaks when, and only when, he responds to language by listening to its appeal. Among all the appeals that we human beings, on our part, may help to be voiced, language is the highest and everywhere the first. Language beckons us, at first and then again at the end, toward a thing's nature (Heidegger 1971, p.216).

Heidegger goes on to say that such a speaking of a thing's nature can never be definitive or expressed in a matter-of-fact way. A person must work towards the capacity to 'see' and 'speak' the phenomena, and 'the greater is the purity with which he submits what he says to an ever more painstaking listening...the further what he says is from the mere propositional statement that is dealt with solely in regard to its correctness or incorrectness'.

To understand hermeneutics in the Goethean sense we must enlarge our definition of language even further whereby the form of the thing is itself seen to be a mode of language. When Goethe said that the phenomenon is its own 'theory' he meant that the 'idea' of the phenomenon is perceived concretely in the phenomenon itself. Gough (1991, p.36) has noted that the great landscape painters and pastoral poets of the eighteenth and nineteenth centuries considered their work as the interpretation of 'nature's text'. Through a new application and interpretation of Goethe's methodology the reading of 'nature's text' may be reinstated as a valid scientific/artistic endeavour. Henri Bortoft (1986[1], p.59) writes:

The aim of (Goethe's) natural hermeneutics is to learn to read the phenomenon in terms of itself. The holistic biology of animal form illustrates this clearly. When the mammal is disclosed in terms of itself then it becomes its own language. In this moment of intuitive perception the mammal *is* language.

Edmund Husserl, the early twentieth century phenomenologist and forerunner of modern hermeneutics, was close to Goethe when he spoke of 'eidetic knowledge'. He too recognised the 'idea' as not merely a subjective construction but as something real and inherent in the form of the thing, apprehensible when one attains to what he called an 'intuition of

essences' (Reinhardt 1960, p.123; Stewart & Mickunas, 1974).

Numerous books have been written in recent times which are direct developments of Goethe's form of phenomenology (or 'natural hermeneutics'). His approach has borne fruit particularly in the areas of plant and animal morphology, water and colour research and landscape ecology (for example Bockemühl 1951 1986, Shad 1977, Adams & Whicher 1982, Schwenk 1965). Gradually a whole genre of this literature is coming into being. One recent text (Amrine, Zucker & Wheeler, 1987) contains a bibliography of five hundred publications concerning Goethe's scientific approach, selected from around four thousand since 1932. Some more recent writings on the subject are Fink 1991, Riegner 1992 1993, Sloan 1991, Cornell 1990, Tauber 1993. Goethe's phenomenology is undergoing a major reappraisal in our time after having been largely ignored or misunderstood by conventional science for almost two hundred years. It is now being realised how relevant this approach is to contemporary environmental issues.

A Preliminary Outline of a Goethean Environmental Education

1. Human creativity in partnership with nature

One of the central issues in the contemporary environmental debate, and certainly a point of focus for environmental education, is the role of human creativity. I am not using the word 'creativity' here in a narrow sense; it is intended to include all forms of human productivity — building, manufacturing, farming, technology as well as art making of every kind. While it has become increasingly clear how destructive some forms of human creativity have been to the world's natural environments, the solutions and ideal alternative ways of proceeding are far from obvious.

A Goethean environmental education would concern itself with environments ranging from wilderness areas to cities. The philosophy which I have been considering recognises that humans are *part* of environments, that one cannot study an environment as an external observer as is presumed by conventional ecological methodology. Even in coming to 'know' an environment, we are, in a sense, creatively participating in it. As I have already discussed, the organic, participatory view of knowledge is that 'being known' is an evolutionary development of nature. Therefore the *way* we cognise natural phenomena becomes a matter of creative responsibility and a fundamental environmental educational issue.

The aim of the Goethean phenomenological approach is to learn to engage with or participate in the phenomena we encounter in environments so that our creative activity, in whatever form it takes, can come to be authentic, to work in partnership with nature. Without doubt we

have freedom in this matter; our creative work may either stimulate and extend the creative forces inherent in nature, or may work in a way which suppresses or distorts them. This approach is a way of deepening our relationship with environments and phenomena, not just through 'feelings' nor the accumulation of 'facts', but through the cultivation of the qualitative, intuitive form of knowing which may be called 'cognitive perception'.⁸ Strategies for conservation, sustainable development and so forth are secondary to this cultivated experience of relationship — they are creative outcomes of it.

Environments with which humans have creatively engaged we call 'landscapes'. That participation may have simply been in the form of our cognising presence or artistic representations, or else may be the more radical physical changes we introduce. Through learning to work creatively in partnership with the creative forces of an environment we have the potential to bring about landscapes in which the elements — including zones of habitation and industry, areas of cultivation, special places for contemplation and creativity and as well as wilderness areas — develop together as in an artistically conceived garden.

2. Experiential learning

Jochen Bockemühl (1986, p.7) has described how he conducts his courses in landscape ecology using a Goethean approach. He and his students enter an environment and sketches are made to record the first impression. This first impression is very significant for Bockemühl; he sees it as the first intimation of the 'whole' or 'idea' of that environment (1986, p.27):

When entering a foreign country, we are apt to become more conscious of the landscape than when surrounded by familiar scenes. We try to take in the scene with all its details, and then to connect them with our first impression. In this way we discover interrelationships. What we took in vaguely with our first impression acquires substance and content.

On the following day a shared picture is reconstructed through blackboard sketches leading to a final painting. Bockemühl has found that, with this pictorial background, it becomes much easier to then study how particular entities relate within this environment, how the 'whole' of an environment expresses itself in all of its 'parts'. Bockemühl's guiding idea is always to 'begin with the whole'. He writes (1986, p.52):

By continually referring back to the overall impression, we can look at each stone, each plant, each animal, and attempt to find its place in the totality out of the specific quality of its appearance.

Goethe (1988, pp.24-5) had described his scientific method in terms of three stages. The first stage, which he called the 'empirical phenomenon', is the everyday experience of a phenomenon. The second stage, the 'scientific phenomenon', is the careful observation of this phenomenon and its relationships. We learn to 'participate' in the dynamic character of a living thing through what he called 'exact sensorial imagination'. In this way, for example, the metamorphic changes in leaves and other plant organs are studied. The third stage is where the 'pure phenomenon' or 'idea' comes to light. This is reached through a gradual deepening of participatory cognition into 'intuitive perception'. Bockemühl (1986, pp.44-52; 1987) has further developed this method with reference to the four classical elements — earth, water, air and fire.

The colours of plants changing with the seasons, the forms of animals, even the song of a bird, all may be seen to express the identity of a place in different ways. The human being is the 'part' of an environment in which that environment becomes conscious of itself. As Bockemühl puts it, it is in the human consciousness that the 'idea' of the environment is mirrored. The 'idea' of the environment is the inherent creative principle at work in that environment, coming to consciousness in the human being in what Heidegger called 'the event of appropriation'.

It should be clear from everything said so far that 'experiential education', in the Goethean sense, does not mean simply going physically into environments to 'have experiences', the counterpoise to theoretical learning. Participatory, intuitive knowledge is itself a mode of 'experience' — the 'theory' is encountered concretely in the phenomenon. Goethe, in his scientific studies, continually endeavoured to overcome abstract thought which he regarded as lifeless and thus inappropriate for the study of living entities. He wrote (Nisbet 1972, p.31):

Theories are usually the premature conclusion of an impatient understanding which would prefer to get the phenomena out of the way.

Goethe tried to avoid the tendency he saw all around him in conventional scientific procedures which was to fit phenomena into preconceived thought categories. He strove for not just a greater understanding but for a more reverent appreciation of nature. He wanted his thinking to be as 'alive' as possible, to become 'as natural and plastic as the example she (nature) sets for us' (Brady 1987, p.283). In other words, he attempted to allow phenomena to 'speak' out of their own nature. Such an approach is experiential in the broadest sense.

3. *The whole and the parts*

The notion that 'the whole is more than the sum of the parts' is often voiced today; its understanding and application is not so easy. According to the organic conception of knowledge, the apprehension of the whole is possible through intuitive cognition. Goethe's meaning of the whole or unifying 'idea' can easily be confused with the rationalist scientific meaning of 'system' or 'law'. The latter two are abstractions which are arrived at through a systematic analysis of the parts of a phenomenon. The model for this approach is the machine; when we study the cause and effect relationships between all the parts of a machine, a system or unifying law can be deduced for its operation. This is the way in which natural science has proceeded, by looking for simple mechanical (cause and effect) relationships between biological entities or their components and out of these deriving a unifying law as an explanation for the functioning of the whole entity. In the case of ecology this becomes difficult because natural environments are so complex; systematic analysis of the parts of an environment leads to ever expanding networks of cause and effect relationships (Bockemühl 1951, 1986, p.86). In this process the whole, as a living, generative principle, is never encountered or intuitively experienced.

Clarification can be gained here by turning to the arts. A musician learning to play a piece is guided by an intuition of the 'whole' of the piece. The rendering of melodies and harmonies, the shaping of every passage of notes, is guided by the intuition of the whole or what could be called the generative 'idea' of the piece. To interpret each note or passage of notes in isolation is to end up with a performance which lacks unity and meaning. One of the principal goals of an education in musical interpretation is to help the student think in terms of the whole as it expresses itself in the parts — in effect the kind of cognition Kant had called *intellectus archetypus*.

This is precisely the way Goethe approached the plant; as he was an artist it was natural for him to bring his artistic instincts to bear upon such a study. He sought, first and foremost, the 'idea' or generative principle which he also called the 'archetypal plant'. He then found that he could interpret why the leaves were shaped in a particular way, why the petals were of a certain colour and form. This is what we would now call his 'natural hermeneutics'. He discovered this whole not in some abstract idea or explanation of the plant, but concretely, in the parts of the plant, each part in a different way expressing the whole (Arber 1959, Goethe 1988, p.76-97). As Henri Bortoft (1986[2], p.287) puts it:

A part is a part only inasmuch as it serves to let the whole come forth, which is to let meaning emerge ... The recognition of a part is possible only through the 'coming to presence' of the whole.

I have already suggested how this would translate into the practice of environmental education. To reach the point of participatory or holistic understanding of an environment is to be in the position where one's creativity can have integrity and authenticity in that it 'brings to presence', in a unique way, the whole or 'idea' of that environment. This is the essence of caring for an environment — where what one creates (produces, develops, transforms) in an environment is not imposed from without (albeit with the best intentions) but originates from within; where it becomes, in a sense, the 'speaking' of that environment. As David Seamon (1978, p.247) writes:

Goethe's approach is important [for environmental education] because it offers a different way of understanding nature. It teaches an alternative mode of interaction between person and environment that entails reciprocity, wonderment, and gratitude. Goethe wished us to converse with nature and discover in ourselves its multifaceted reflection.

4. The role of the teacher

Many issues could be considered in relation to the application of the organic conception of knowledge to environmental education; issues such as the nature of learning and communication, teaching techniques and so forth. Here I will be limiting myself to one fundamental question; is there a role for a teacher in a Goethean form of education, in the traditional sense of guide and exemplar? One only has to take a glance at current trends in environmental education to see to what extent this traditional conception is being eroded. For example, White (1992, p.66) outlines a tertiary environmental education built upon constructivist theory where the role of the teacher has been minimised in line with a 'de-schooling' philosophy. For the constructivist there are no 'truths' to be discovered; there is only one's 'fictions' and the 'fictions' of others which can be shared through dialogue. By means of a dialectical process, new, consensual 'fictions' can be arrived at. The 'teacher' is seen as a 'co-learner' or 'co-enquirer', who facilitates this process and is otherwise indistinguishable from the 'students'. The experiential aspect of this constructivist orientated education is the focus on the students' own experiences rather than on what might be learned (or experienced) through the agency of the teacher.

We can again turn to the arts for clarification here, where the accepted teaching methods are similar to those most suited to a Goethean environmental education. In music and drama schools, for example, students find their way into the company of a generally respected teacher or director, someone who has achieved some degree of recognition both for their technical skills and insight, say, into the works of Shakespeare or Beethoven. The aspiring students gladly and respectfully place themselves

under the guidance of such a teacher and as the students follow the interpretation suggested by the teacher they are actually involved in a process of learning to 'see'. The question of proof doesn't arise here any more than it does in Goethean science; there is no desire to pin down the richness of reality in this way and different insights are respected by an openminded teacher. But this doesn't mean that 'everything is a matter of opinion' and merely subjective or fictional. The 'idea' is inherent the phenomenon itself — that is the essence of the phenomenological method. Two people may have different insights into the same phenomenon depending upon the angle from which they are looking and the phenomenon then appears as modified in different ways. The art of interpretation becomes a matter of seeing in a way which is not onesided, which is true to the nature of the thing being studied and as little as possible conditioned by the prejudices and habits of everyday thinking. Great intuitive-scientific interpretations of natural phenomena, like great works of art and artistic interpretations, cannot be 'proved' to be good; however they tend to withstand the passing of time whereas interpretations which are just subjective flights of fancy (inauthentic in the sense I have indicated) tend to fall by the wayside.

Notes

- 1 The work of the Chilean neurobiologist, Humberto Maturana, has been used as support for the constructivist approach to environmental education described by White (1992). To take one example from his experimental work with frogs (Maturana & Varela 1987, pp.125-6): Maturana cut the eye of a tadpole and rotated it 180 degrees; the frog matured and its response to the external world was then tested. When the rotated eye was covered the frog was easily able to catch a worm with its tongue; when the normal eye was covered, the tongue shot out at a deviation of exactly 180 degrees. For the experimenters this showed that living beings in general do not have direct access to 'reality', only to a 'reality' determined by the structure of the knower, in the case of the frog by the "internal correlations" between eye and mouth.
The chief problem here, as I see it, is one of self-contradiction. Pure 'objectivist' scientific research is being used to underpin a constructivist philosophical position which denies that 'objectivist' science has any validity, which claims that objective 'facts' are really fictions.
- 2 Some may protest that there is an important distinction to be made between the social and personal construction of knowledge; however, in constructivist terms, these are aspects of one and the same process (in other words, the difference is one of emphasis). Constructions are not produced, located or legitimated 'in society'. They are created in the minds of individuals and may be transmitted in time and space and re-created (perhaps in a modified form) in the minds of others. Society is nothing other than a collection of individuals.
- 3 Constructivists, who will perhaps be surprised at being called reductionists, might

consider in their response the fact that the whole Neo-Kantian, constructivist position is built upon the assumption of a particular notion of truth, the so-called 'correspondence theory', whereby a concept is considered true or false depending on whether it corresponds to objective reality. Heidegger (1992, p.258) has pointed out that this understanding of truth was assumed by Kant who believed that things are unknowable 'in themselves'. Constructivists, likewise, take this concept of truth and conclude that direct knowledge of objective reality (or Being as such) is impossible, that we remained wholly bound up in a subjective, fictional world. Upon this questionable conclusion they have erected a vast theoretical edifice. As Heidegger indicates, what should be inspected is *the validity of this theory of truth*. Rudolf Steiner (1988[2], p.106) is saying much the same thing when he writes:

Kant accepted the customary concept of what knowing is and asked if it were possible. According to this concept, knowing is supposed to consist in making a copy of the real conditions that stand outside our consciousness and exist *in-themselves*. But one will be able to make nothing out of the possibility of knowledge until one has answered the question as to the *what* of knowing itself. The question: *What is knowing?* thereby becomes the primary one for epistemology. With respect to Goethe, therefore, it will be our task to show what Goethe pictured *knowing* to be.

This leads on to my consideration of Goethe's phenomenology and intuitive knowledge. Intuitive knowledge is participatory; it is the thinking which thinks *out of* the nature of a thing, not the thinking of a subject *about* an object. It relates to what Heidegger was attempting through his ontological interpretation of human nature. Zimmerman (1990, p.148) writes:

Heidegger emphasised that what he had been calling "the understanding of being" was misleading in that such understanding could be interpreted in the traditional way as a human faculty or capacity. "The understanding of being," he explained, is not to be construed as an achievement of the subject, as when we say, for example, that "he finally understood the problem." Instead, "the understanding of being" is in effect identical with the event of being itself: the event of disclosedness or presencing by virtue of which entities show themselves.

- 4 I am by no means the only one attempting to point out the self-contradictions inherent in the constructivist position. For example, John Searle (1983, p.75), in a devastating review of *On Deconstruction: Theory and Criticism after Structuralism* by Jonathan Culler, notes that at one point Culler states that truth is "a kind of fiction", and later that "truth is both what can be demonstrated within an accepted framework and *what simply is the case whether or not anyone could believe it or validate it*" (Searle's italics). Searle observes that Culler is trying to have it both ways, that the italicised phrase is not consistent with the idea of truth as fiction.

- 5 The method of deconstruction is narrowly understood to be the process of critically reading a text by those who trace it back only as far as the work of the French poststructuralist Jacques Derrida. In fact, as Searle (1983) notes, Derrida derived most of his deconstructive tools from Heidegger, and deconstruction as a method can be traced further back to the philosophy of Nietzsche. Furthermore, as Searle shows in this review, Derrida's interpretation of Heidegger emphasising 'text' is in itself dubious.
- 6 Martin Heidegger uses this as a maxim for the phenomenological method deriving from his teacher Edmund Husserl.
- 7 Gough (1991, p.37) would appear to escape pure nihilism by referring to the 'seamlessness'. However the following sentence of his should be carefully considered: "Assigning a name to something constructs the illusion that what has been named is genuinely distinguishable from all else" (1991, p.37). In other words, everything is the same thing, things cannot 'really' be distinguished from each other, there is only a homogenous oneness — the 'seamlessness'. What he is actually talking about is an absolute no-thingness, a vacuity. Perhaps he would want his 'seamlessness' to be equated with the Indian Brahman, or the Chinese Tao, the Absolute Reality; this would imply a mystical truth. However in Gough's thesis there is no evidence of the subtle argumentation by which philosophers in both the East and West have demonstrated how the One appears *in* or *as* the many (or, in terms relevant to Goethe, how an organic whole or unity generates a multiplicity of parts yet remains a unity). Speaking strictly from the constructivist point of view, Gough's idea of the 'seamlessness' has to be considered as the greatest fiction of all.
- 8 A very clear philosophical exposition on the meaning of qualitative cognition or 'cognitive perception' is given by Hegge, 1987.

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