

## **A tertiary curriculum for sustainability**

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### **Abstract**

Current educational practice in the mainstream worldwide is not fulfilling its potentially pivotal role in counteracting the environmental crisis. Tertiary education has even been accused of contributing more to the problems than to their solutions. The shortfall is caused by the transmission of harmful or counterproductive values, beliefs and attitudes and by the failure to elicit more productive learning outcomes. In this paper I summarise pertinent findings of my recently completed doctoral thesis. The first part presents the case for educational reform by outlining the manifestations of educational shortfall at the tertiary level. In the second part I propose the main agenda and general aims of a comprehensive curriculum reform to address those problems. They include re-defining progress as achieving sustainability, replacing anthropocentric values with ecocentric values, remedying skill gaps, re-orienting education towards the future, eliminating parochialism from education systems and empowering the learner to take action.

### **The Failure Of Higher Education**

At the turn of the millennium, humanity finds itself in a global environmental crisis. The rates of resource depletion are increasing; the global human population continues to grow out of control; pollution continues with its consequences on climate, habitat quality and public health; we see unprecedented rates of species extinctions caused by the worldwide modification of ecosystems through habitat depletion, modification of landscapes and climate, and through species displacement. The two most pressing problems among those are human overpopulation and global warming. (Union of Concerned Scientists, 1992; McMichael, 2001)

There is overwhelming evidence that the crisis is anthropogenic. Specifically, the five causative and self-reinforcing processes include economic growth, population growth, technological expansion, arms races, and growing income inequality (McMichael, 1993; Furkiss, 1974; Coates, 1991). Humanity is most likely now in a situation of overshoot, where unsustainable environmental impacts are eroding the source and sink capacities of ecological support structures (Catton, 1980; McMichael, 2001). Overshoot results if the signals that the system communicates back to the population are delayed, distorted, ignored or denied, which in turn causes detrimental behaviour to continue unchecked. Assuming that humanity has moral agency, this means that humans are responsible for the consequences.

In this crisis, the greatest amount of harm is done by people with higher degrees (Orr, 1999a; Priesnitz, 2000). This is because the vast majority of people in crucial decision-making positions are likely to have tertiary qualifications (Lautensach, 2003:196). Most of the above-mentioned processes are in part propelled by the ill-advised, short-sighted and self-serving decisions of this minority who holds a considerable amount of political power. Another major contribution to the crisis obviously comes from larger parts of the population whose behaviour, through omission and commission, fuels those processes causative to the crisis. But even those people tend to be citizens of OECD countries, and many of them have received some tertiary education.

The fact that a large number of well-educated people continue to make decisions that are blatantly counterproductive in the present situation indicates that merely being informed about the crisis does not by itself dispose a person toward responsible behaviour. Some empirical evidence also suggests that even extensive professional contact does not usually result in moral attachment to the objects of one's work (Lautensach, 2004). What, then, is driving the decisions and the behaviour of those people? Everyday experience suggests that appeals to values and emotions go a long way to convince people whereas factual arguments tend to fail on morally significant issues (Ehrlich and Ehrlich, 1990; Cosgrove, 1994). Also, aims that were converted from instrumental to the status of end values through the process of goal displacement tend to gain influence on our decisions (Wenz, 1988). Those observations, as well as abundant published evidence (e.g. Nicholson-Lord, 2000) suggest that values, attitudes and beliefs determine human behaviour more strongly than does propositional knowledge (Bowers, 1993). The unsustainable and counterproductive behaviour of the vast majority of people in rich countries is informed by beliefs, attitudes and values that amount to a dominant concept of progress, related to Fien's (1993:23) 'dominant social paradigm' (DSP). It guides decisions and behaviour at the level of the individual, communities and societies, resulting in detrimental omissions and commissions (reviewed in Lautensach and Lautensach, 2004).

Our values, attitudes and beliefs are determined by our culture which, according to Geertz's (1972:261) definition as "the shared patterns that set the tone, character, and quality of people's lives" functions as a body of programs which provide a template for the organisation of social and psychological processes in the individual and in society. The early foundations for core values are laid down during primary socialisation, a good deal of which takes place in the course of formal education (Bowers, 1993; Postman, 1997). Formal education, while by no means the only value-determining factor, represents also the factor that is most easily controlled and can be deliberately modified through policy reform.<sup>1</sup> Coming back to the causation of our current predicament, we can conclude that tertiary education is failing to live up to its significant potential for contributing to the flourishing of humanity. This conclusion does not diminish the considerable contributions to our current predicament that come from societal structure and its power relationships. However, it recognizes the considerable role played by the education system in stabilising and reproducing societal structure. The wider 'system' would collapse without the support by educational systems. Moreover, inclement power relationships do not help to absolve educators of their moral responsibility to do better. On the other hand, structural constraints obviously do place limitations on human agency (McMichael, 1993), and lasting changes in human behaviour can only be accomplished if reforms focus on education as well as on systemic limitations (Bradsen, 1994).

The failure of higher education manifests itself in two ways. Education results in the transmission of harmful or counterproductive values, beliefs and attitudes, or at least it fails to prevent their transmission through other avenues (Postman and Weingartner, 1969). This includes the teaching of a large amount of material that is factually wrong (Orr, 1992, 1999a). Education also fails to widely elicit alternative, more productive learning outcomes, namely ecological concepts and the values, beliefs and attitudes that would provide the basis for sustainable living (Postman, 1997; Smith and Reynolds, 1990). Summarising a substantial number of published analyses, the deficiencies of the current educational outcomes include a lack of the life skills required for a sustainable society of the future, few skills for moral reasoning, and inadequate analytical skills. Underlying these results is a general inattention to affective learning outcomes. Value-related outcomes, wherever they are specified in prescriptive documents, are often not translated from ill-defined goal statements to specific instructional objectives and teaching methodology. (Lautensach, 2003)

How conclusive is the evidence for causation? The answer to this question depends on what particular manifestation of the crisis it refers to, and at what scale. For example, the answer to the question whether inadequate education is causing global warming is arguably affirmative. Without being taught to hold unrealistic confidence in misleading conceptions of progress most of humanity would never have ended up in this insane rut of fossil fuel dependence. But is education also to blame for the loss of rainforests in Borneo? Here the causative connection seems more tenuous. Two important variables in this causation are the extent of power wielded by educated individuals in a particular context and the contribution made by formal (tertiary) education to the relevant attitudes and values of those individuals. What seems undisputable is that education systems worldwide could perform far better

towards preventing and mitigating the crisis.

Some people might concede the causation of the crisis by education, and even the potential to mitigate it through educational reform, but would still object to the idea of a moral duty for educators to make such attempts. Two considerations suggest that such a duty exists. The first is based on the principles of non-maleficence and beneficence in medical ethics. The principles of medical ethics seem to be applicable to education because the relationship between the learner and the teacher bears a fair resemblance to that between the patient and the doctor. The second consideration rests on intergenerational justice which posits a moral duty on every individual not to jeopardise the well-being of future generations. Because of the amount of influence that educators wield over the moral basis of behaviour in their graduates, this duty is greater with educators than with many others. Through omission and commission, present educational practices violate this duty to an extent that contravenes the spirit (if not the letter) of institutional mission statements worldwide.

## **Educational Solutions**

Given that the *status quo* of educational practice carries considerable potential for improvement, and given the moral duty for educators and institutions to reform education, the question arises how this educational shortfall could be addressed. I will now outline the agenda of a program for curriculum reform. Even though my arguments are largely based on observations from secondary and tertiary education, this plan is applicable in principle to all levels. I will restrict my suggestions to formal education and leave the educational roles of the media, the entertainment industry and general cultural influences for another occasion.

One overarching goal of the proposed curriculum is to lay the moral groundwork for a globally sustainable society. “Unless a society wishes to deny the opportunity of a specified class of people to deal competently with certain types of issue in life, it must view education as the overall development of citizens, and not narrowly as the granting of occupation-specific passports”(Tam, 1998:58-9). This is even more important in the light of the more volatile job market and more rapid technological advancement in many fields (Tarrant, 1989; Entwistle, 1996). Elsewhere (Lautensach, 1993) I have argued that a transition towards sustainable living can be managed under the ideals of efficiency, restraint, adaptation and structural reform. A second overarching goal is the creation of a motivation in the individual towards paying restitution to ecosystems and threatened species in compensation for past wrongdoings. In accordance with the significant role played by the normative concept of progress, those goals are pursued by emphasising the development of alternative values, attitudes and beliefs, to form a new substantive concept of progress.

In order to pursue those two goals, the reform has to address the causes for its current failure as outlined above. This gives rise to two general agenda points for reform: to stop teaching counterproductive beliefs and values; and to teach appropriate concepts and values more effectively. A third agenda point arises out of considerations of tactical expediency and distributive justice, namely to implement a pedagogy of liberation. I will briefly explain what reforms I consider important under these tripartite agenda before I discuss learning outcomes.

### **Stop teaching counterproductive beliefs and values**

As I argued above, an educational program in pursuit of the goals of sustainability will need to effectively counteract the dominant concept of progress. The dominant ideology of progress draws its power from beliefs and values that are partly reproduced through enculturation at large, but to a large part they are specifically transmitted through formal education. One important set of agenda for reform, then, will be designed to interfere with those systemic mechanisms of ideological reproduction. This can be accomplished through two objectives. Firstly, educational reform must counteract the hegemonic influence of ideologies that serve to perpetuate the dominant concept of progress. Those ideologies include the following beliefs, values and attitudes: Economic growth as a good in itself; cornucopianism; complacent optimism; omnipotence of science & technology; moral

nihilism & materialism; consumerism; freedom from nature and dominion over it. Another target is represented by the neoliberal concept of individualism as “the problem with individualist ideologies ... is that they in fact leave prevailing power relations, however unjust, firmly in place” (Tam, 1998:78-9).

A second objective will be to prevent the perpetuation of anthropocentric values. I have argued my reasons for this in more detail elsewhere (Lautensach, 2003). In brief, anthropocentric ethics represents the major conceptual and moral obstacle on the way towards implementing the four goals of sustainability, by lending support to the moral claims of the dominant concept of progress. Furthermore, anthropocentrism as a concept suffers from internal inconsistencies. The anthropocentric vision of human flourishing seems conceptually incoherent or ill-defined and shallow; and pursuing the anthropocentric concept of human flourishing is ultimately counterproductive. The shift towards ecocentric ethics will largely be concerned with value education and include a moral paradigm shift that extends beyond environmental values into how we conceptualise the moral position of humanity in the world. Among the moral concepts that have to be counteracted here are human-nature dualism and the ideals of freedom from nature and human dominion.

A number of strategies can be enlisted towards the goal to counteract those ideologies. Existing curriculum must be re-assessed and re-interpreted. As the bulk of the counterproductive learning outcomes appear to result from implicit value messages and omissions from the curriculum, the focus of analysis should be directed at the null curriculum and the hidden curriculum. Much of the burden of this analytical task must fall on the educator until such time as more helpful guidelines and resources become available. Some of this analysis should also be carried out by the learner, as will be argued more fully below. Educational practice must also help to diminish the influence of counterproductive propaganda messages from outside of the educational institutions. An essential requirement towards all of those is the educational objective of getting the learner to unlearn counterproductive concepts as a prior condition to learning, an objective that has not received sufficient attention (Postman and Weingartner, 1969:208).

### **Teach appropriate beliefs and values in more effective ways**

Foremost among the positive goals for reform must be the teaching of an environmental ethic that is consistently ecocentric. This encompasses several values and attitudes that will be described further below. Another group of desirable learning outcomes consists of beliefs and attitudes of the new ecological paradigm which is to replace the dominant social paradigm (Fien, 1993). They include dependence on nature, integration within the natural environment, the recognition of natural limits to consumption and to technological development, concern for future generations and respect for nature. A third group of outcomes are defined by certain skill gaps and by the cognitive reasons for human behaviour that resulted in overshoot. They translate into cognitive as well as affective learning outcomes.

Curricula will have to be re-focussed in order to enlist more academic disciplines in the efforts of finding sustainable solutions to the human predicament. For example, the gradual inclusion of ecological principles into curricula of economics during the 1980s has led to the development of the new field of ecological economics and an international society and journal by that name. Ehrlich and Ehrlich (1990) argued that, because economics carries considerable political weight and economists hold considerable influence over politicians, this development should be augmented by enriching primary and secondary curricula with the basics of ecology. “From here forward, a university education that is not environmental education is no education at all.” (Rolston, 1996:189)

The obsession with the present and past has to be mitigated by a more forward-looking stance. This includes learning about the crisis and about current trends and probable future scenarios. It also includes several attitude changes as will be explained below. Parochialism of form and content has to be addressed at all levels of education. The goal here is contingent with Perelman’s (1976) ‘ecological education’ towards a ‘softworld perspective’, educating learners to be competent in finding solutions rather than selling a particular position on limits to growth. New solutions can be found with the help

of new values and new assumptions. However, none of this guarantees that the learner will actually act on such insights. This requires a pedagogy of liberation.

### **Implement a pedagogy of liberation**

Why is it important that the learner takes action on his insights and convictions? Achieving a sustainable society requires a transformative effort, unlike the more passive transition to post-industrial society (Perelman, 1976:196). Social transformation will be necessary in order for the required changes in human behaviour to be adopted by the wider population and to take root in our culture. Such a process depends on a sufficient contingent of competent graduate transformers. The abovementioned two reform agenda of ceasing the reproduction of counterproductive ideologies and of teaching appropriate objectives in more effective ways do not go far enough here. A change of course in value education would doubtlessly have an effect on the ways in which the learners evaluate their actions and those of others. But such a strategy leaves it more or less up to chance to what extent the change in ethics will result in a change in behaviour. This concern is addressed under my third agenda point of reform, to implement a pedagogy of liberation. It is designed specifically to help empower and motivate the learner towards taking action. Unless the learner is prepared to think and act for him- or herself on the basis of recent learning, neither can the reasons for overshoot be entirely eliminated, nor can we expect to win the race against time. I am arguing here from a humanistic perspective to learning by developing the concept of self, based on the work of Abraham Maslow (1968) and Carl Rogers (Rogers and Freiberg, 1993).

Liberation from what? Exploitative dependencies acting from within the learner and structural constraints acting from without tend to hinder any deliberate change to more sustainable living. The former are an inevitable outcome of enculturation and constitute a web of habits, institutional relationships and ideologies that govern the learner's interactions with society – such as consumerism, the work ethic and misguided theories of progress. For most people this web of dependencies makes it virtually impossible to adopt a sustainable way of life, through commission or omission, unless they free themselves of at least some of those conceptual constraints and replace them with more helpful relationships. Without receiving some directed help through education, the learner may not be able to accomplish this. From without, the existing power imbalances are ill-suited to mitigate the situation and that they may constitute part of the problem. The global economic system has placed severe limitations on the consumer in terms of real choices, without any political mandate to do so, and to the detriment of the public good. The liberalisation of trade, the privatisation of state assets and the commodification of nature under the dominant concept of progress have led to intensified destruction of ecosystems and resource depletion worldwide. This imposition of socio-political and socio-economic contexts on humans by other humans with the effect that short-sighted exploitative behaviour becomes their only possible course of action constitutes an act of oppression (Barber, 1998). The educational reforms I am proposing are designed to liberate the learner from the influences of the dominant paradigms and structures that perpetuate those internal dependencies and external constraints.

The objective of this liberation is not only to enable the individual learner to change his or her ways of living, it is the destabilisation in the long term of those oppressive structures and relationships to prevent backlashes. In this counter-hegemonic mission my proposed pedagogy resembles the liberation pedagogies advocated by the Freirian school of critical theorists. As with the political oppression targeted by the Freirians, the mechanism of the oppression relies on a rigidly hierarchical system where almost everybody acts as the oppressor as well as the oppressed (Young, 1992).<sup>2</sup> The oppression operates through and results in alienation (from the environment as well as from each other) and fragmentation rather than solidarity. It invades the culture of the oppressed (as seen, for instance, in the 'branding' of teenagers and the encouragement of indifference towards animals) and silences their personal voices. It can manifest itself in exploitation, marginalisation, powerlessness, cultural imperialism, and violence (Young, 1992). It forces individuals to follow prescriptions (those of consumers) and to become spectators instead of actors. It replaces the freedom to act with "the illusion of acting through the action of the oppressors" (Freire, 1986:33). Public education at this stage plays an essential part in habituating the young learner to this situation and in achieving compliance

(Galbraith, 1984; Beder, 2000; McLaren, 1986; Connell, 1977; Bowles and Gintis, 1976; Lautensach, 2003). Counter-hegemonic education aims to accomplish the opposite, to relieve the learner from this habituation to oppression.

How is this liberation expected to come about? As Paolo Freire (1986) noted decades ago, education systems are largely ill-equipped to tackle oppressive political situations. In the absence of effective political support from the authorities, educator and learner have to transcend this oppressive situation by working together through a process referred to by the Freirians as *conscientisation*. It involves a set of educational strategies resulting in the empowerment of the learner and in the achievement of a critical consciousness. This critical consciousness will permit and ensure the unmasking of oppressive structures, and it is of relevance wherever such oppressive structures exist. Through the process of conscientisation the learner becomes empowered to take action and to engage in attempts to convince others of his newfound views. The empowerment of the learner represents an important aim of educational reform towards sustainability. As the last of six general aims in the proposed curriculum, I will discuss what constitutes empowerment and describe educational strategies to achieve conscientisation. But the agenda of liberation reach into all the other aims, as effective progress towards them depends to a large extent on the learner's ability to re-examine his own values and beliefs, and to take action.

## **Six general aims**

The curriculum that I am proposing is organised into six general aims that form groups of learning outcomes. They include the adoption of a concept of progress that is informed by sustainability, the replacement of anthropocentrism with an ecocentrist environmental ethic, the acquisition of requisite skills, a vision for and awareness of the future that includes change and sustainable solutions, a non-parochialist view of environmental values and academic inquiry, and the liberation from exploitative dependencies. The proposed curriculum follows Perelman's (1976) recommendation for a curriculum for ecological education to be multilevel, interdisciplinary, problem-centred, future-oriented, global, and humanistic.

Across those six general aims extend as common threads the three agenda of counteracting undesirable educational outcomes, encouraging such outcomes as are conducive to the general aims, and empowering the learner to take action. The appended table shows an overview of those negative and positive outcomes for each of the six general aims. It also contains lists of proximate instructional objectives that were either proposed in the literature or are obviously and directly conducive to those aims. Lastly, a sample of the specific methodology towards those objectives is presented at the bottom of the table. Besides the three agenda, other obvious common features among those six general aims include the emphasis on ideological change, the prevalence of values and attitudes among educational outcomes, and a propensity for action informed by those values. For the sake of brevity I have relegated many details on objectives and learning methods into endnotes.

### *1. Re-define progress as achieving sustainability*

The proposed curriculum is to address both the impediments to feedback that have led to overshoot and the root causes for unsustainable behaviour. This first general aim is concerned with changing the dominant concept of progress in the learners towards a concept that incorporates effective feedback and that informs more sustainable behaviour. I propose that this aim be pursued through two strategies: enabling the learner to critically analyse the dominant concept for contradictions, and encouraging the development of a personal ethic of sustainability by extending existing values of justice towards future generations and ecosystems.

The concept of progress that currently dominates the global culture includes several counterproductive ideologies such as consumerism, cornucopianism, technologism and scientism (Lautensach and Lautensach, 2004). Contained in those ideologies are misleading beliefs such as progress being identical with economic growth, the potential of laissez-faire policies to bring about such progress, and

the absence of limits to quantitative growth. As I have argued elsewhere (Lautensach, 2003), those beliefs are mistaken and counterproductive, and the educational strategies described here are designed to destabilise and replace them. Also contained in those ideologies are the attitudes of uncritical optimism, of regarding nature as the non-human and inferior 'other', and of moral nihilism and materialism. Again, those attitudes are counterproductive and will be targeted by the proposed curriculum. The dominant concept of progress is also strongly informed by the liberal ideals of personal autonomy, property and rational agency. As those ideals are not completely without merit for a turn towards sustainability, they will be targeted only insofar as they have been applied inappropriately; in other respects they are to be reinforced and extended.

A curriculum focussing on counteracting dominant ideologies will need to motivate and empower the learner to question them. The questioning of dominant ideologies is a complex and challenging educational outcome which requires the learner to escape his dependencies on peer approval and social status and to develop a concept of self worth that defines itself along more explicit and internal criteria (Maslow, 1968:101).<sup>3</sup> The learner also needs to re-focus his concept of personal liberty from the atomistic neo-liberal sense to a more inclusive, holistic vision of personal freedom in connection with other life forms.<sup>4</sup> This moral transition definitely relies on the prior adoption of a Gaian ethic by the learner.

The general aim of re-defining progress is also concerned with getting the learners to apply the imperatives of sustainability to critically re-think their personal concepts of progress and to let those new insights inform their choices regarding lifestyle and politics. In this process of re-thinking progress the learner should take into account human fallibility, make use of traditional knowledge and of biological models of efficiency, and aim for an optimisation of scale (Orr, 1992). A preliminary step in the learner's progress therefore involves a consequentialist analysis of the assumptions on which cornucopianism, scientism and the technological imperative are founded.<sup>5</sup> In this context the learner is likely to benefit from an introduction to the scientific aspects of the Gaia model. It is to be hoped that such analytical activities will also shake the learner's confidence in the other assumptions subsumed under the DSP (the potential of *laissez-faire* policies, human-nature dualism, measuring progress as economic growth) to the point that he will cease to accept them as axiomatic. By introducing critical reflection and deliberation as obligatory elements in the process of innovation, the learner is guided towards recognising the four aims of sustainability (efficiency, restraint, adaptation and structural reform) (Lautensach and Lautensach, 2004) as essential parameters that must shape his concept of progress. An important cognitive learning outcome is the understanding that in all processes of growth the transition from expansion to restraint inevitably becomes an imperative at some stage. This understanding can be encouraged through analytical exercises, as illustrated by the topic of technology in society.

The relationship between sustainability and technology represents a particularly important target of this learning process through analysis because it involves more than just dismissing a mistaken assumption. Ecological sustainability requires a more reflective attitude towards technology that seeks to clarify the effects of technology on the distribution of power and control in society and that helps the learner determine what technologies and research are appropriate for our goals (Schumacher, 1973). The goals are "to optimise rather than maximise, to cultivate rather than manipulate, and to differentiate rather than centralise" (Ferre, 1988:134) and to prevent the learner from defining sustainability in purely technological terms (as was done in the Brundtland report [WCED, 1987]) (Orr, 1992:28). This attitude is to replace the currently dominant ideology of the technological imperative. There is a tension here which translates into the curriculum, between the need for caution and humility and the need to maximise under time pressure the efficiency of what technology has become indispensable, or, in terms of the goals of sustainability, between restraint and efficiency. The learner needs to reflect and deliberate on where the appropriate compromises might lie from case to case.

This process of reflection and deliberation in the learner would represent a significant improvement over the dictates of the technological imperative which do not recognise any need for restraint or sufficiency. As soon as the learner acknowledges that restraint and humility are one part of a dialectic and that reflection on it constitutes a moral duty she has taken another step to free herself from the

influence of the other modern ideologies – cornucopianism, materialism, scientism, and the DSP. The learner’s development has now begun to embrace the realm of the moral. The adoption of an ‘ecological morality’ (Allsopp, 1972:38) is analogous to the mitigation through human rights theory of the ignorance, self-righteousness and greed had informed the ‘progress’ of colonialism in past centuries, and it can be justified to the learner with similar moral arguments, based on justice and on virtue (Durkheim, 1961; Etzioni, 1995). Those arguments rely also on what progress the learner has made towards some of the other general aims, particularly ecocentrism, orientation towards the future and the de-segregation of academic disciplines.

Encouraging such a process of moral development represents the second strategy under this general aim of re-defining progress, with the first focussing on cognitive development. Once the learner has recognised the essential roles of efficiency, restraint, adaptation and structural reform in the critique of the dominant concept of progress, it is to be hoped that in due course he will adopt them also as moral norms – I see no reason why educators should not attempt to exploit the phenomenon of goal displacement for educational ends in this way. It is to be hoped that as a result the learner adopts a personal sustainable lifestyle and maintains it ostentatiously and happily. The four goals would then represent behavioural learning outcomes that can be used for assessment.

The pursuit of efficiency will provide little challenge as its benefit will appear plausible to the learner, because as part of cost-benefit analysis it conforms with the dominant ideology of economic rationalism which he is habituated to. The learner’s propensity for adaptation and structural reform can be encouraged and assessed by teaching mental flexibility, critical analysis, and initiative, as well as ‘Learning II’ (for more on Learning II, see the general aim of mitigating cognitive deficiencies).<sup>6</sup> Restraint as a behaviour depends largely on attitudinal changes, depending on what it refers to. Restraint and sufficiency as moral norms need to be extended beyond technology to consumption patterns, rights of personal property, and ultimately to personal reproduction. An assessable behavioural objective would be for the learner to critically challenge pro-natalist attitudes and policies in materials of his choice.

Adopting a personal ethic of sustainability would constitute the ultimate end of this educational process. At this stage the learner translates the conceptual model of sustainable living into a set of self-imposed moral norms. This conceptual step can be encouraged by getting the learner to apply the four principles of bioethics to re-state his substantive concept of progress, and making use of the body of educational expertise that has been developed by teachers in bioethics. Beneficence, non-maleficence and justice can all be identified as guiding principles in the preceding arguments. Justice takes the form of global and intergenerational justice, resulting in obligations to future generations. Valuing the welfare of future generations comes perhaps most easily to those with offspring of their own; the teacher could make use of this. Just as bioethics developed out of a need to codify the behaviour of a highly empowered professional elite, perhaps the learner becomes able to develop an ethic of sustainability once he is convinced of his power over the well-being of future humans, of the validity of the four principles, and of the detrimental effects of ‘business as usual’. General educational strategies for the teaching of values will be discussed under the next general aim, in the context of ecocentrism.

Ideally the learner’s ethic of sustainability should include two additional considerations beyond the extension of the principles of bioethics to future generations. Firstly, the learner’s concept of land ownership takes the form of a lease or loan from future generations.<sup>7</sup> The second is a duty for restoration and restitution towards ecosystems, populations and species. This sense of duty may only arise in the learner if he adopts an ecocentric ethic (Wenz, 1988:27) with a focus on the value of Gaia. Thus, complete success towards this first general aim is predicated on progress with respect to the second one, adopting an ecocentric ethic.

## *2. Replace anthropocentric values with ecocentric values*

The majority of technical recommendations on how to deal with the crisis are of little worth inasmuch as they fail to transcend the conceptual and moral constraints of anthropocentrism. Since

anthropocentrism constitutes part of the problem only a critical appraisal of its shortcomings and its eventual replacement by alternative ethics can deliver effective solutions. I am proposing an ecocentric curriculum that combines an ecosocialist pedagogy of liberation with a deep green vision of transforming personal values. The general aim of value transformation is pursued in four stages: developing a critical attitude to question anthropocentrism, acquiring the requisite cognitive skills to do so, adopting the new ecocentric values, and developing an attitude to act on one's values. I will explain them in turn.

In the preceding sections I suggested some ways by which the learner can be encouraged to develop a critical attitude towards dominant ideologies. In order to focus this critical attitude onto anthropocentrism, the learner needs to develop a sense of a meta-value by which anthropocentrism itself can be evaluated. For instance, the learner can develop a critical attitude if he realises that anthropocentrism jeopardises the survival of human civilisation, of what Sosa (1996:57) called the "community of communication". In this case, the survival of human civilisation and integration with nature would constitute such deeper values. "We are totally subservient to the basic systems of life on earth. They are not ours; we are theirs"(Van Matre, 1990:127). This insight also invalidates the ideas of freedom from nature or dominion over it, another important requirement on the way towards an ecocentric ethic (Bowers, 1993; Wilson, 1984; Leopold, 1966:240).<sup>8</sup>

An essential requirement for the development of a critical attitude towards anthropocentrism is that the hidden curriculum be revised to eliminate implicit counterproductive messages. For instance, education about the environment must abandon its habitual and unreflected references to 'resource management'. The term 'natural resource' is based on the anthropocentric ideals of freedom from nature and dominion over it, as is 'management', 'engineering', and 'producing'. The ideal of dominion is also communicated through the discourse of property rights over ecosystems and animals, widespread in courses varying from agriculture to health science and in the associated research literature. The emphasis on management represents a technical cop-out which the learner must be encouraged to avoid.

Acquiring the cognitive skills to step back and critically assess implicit ideological messages requires, first of all, that one is able to recognise an ideology for what it is. This sort of detachment depends on analytical skills but, most of all, on a liberated sense of identity as will be explained in connection with the sixth general aim. The acquisition of cognitive skills is best facilitated by problem solving activities. Because those skill-related objectives are necessarily transdisciplinary, traditional education systems with their rigid disciplinary boundaries seem ill equipped for this task. Educational strategies to provide a basis for cross-cultural moral critique of ideologies have been devised by Tam (1998:59-62) and Walzer (1994).

In order for the learner to adopt the new values of ecocentrism, education systems will have to resort to education *in* and *for*, rather than *about*, the environment. This entails the deliberate and explicit teaching of values. In the words of the late Stephen J. Gould, "we cannot win this battle to save species and environments without forging an emotional bond between ourselves and nature as well - for we will not fight to save what we do not love" (quoted in Orr, 1999b:232). The realisation that humans owe respect, affection and empathy to non-humans because of their intrinsic value can form the basis of an ethic of biocentric individualism (Taylor, 1986). Although not as desirable as an outcome as an ecocentric ethic would be, biocentrism can serve as an important stepping-stone on the way. The recognition of intrinsic value and interdependence commands an attitude of humility towards the rest of nature which can easily be extended to ecosystems. The choice of teaching methods for this aim has been subject of much discussion.<sup>9</sup>

The formation of environmental values in the learner can be monitored and assessed according to theoretical models of learning (Knapp, 1980) and by using lists of specific valuing skills as performance criteria (Knapp, 1983:26). Stage models of moral development such as Kohlberg's (1981) or Ornell's (1980) might provide reference criteria for assessment.<sup>10</sup>

The last stage in the process of value transformation towards ecocentrism consists of developing the attitudes to act on one's values. Education towards this end is directly contingent with liberation

pedagogy. Besides such liberation, acting on one's values is also contingent on the learner finding it socially acceptable to show affection, and on being able to justify affection to others.

### 3. Remedy skill gaps

The condition of overshoot in the global crisis results primarily from certain peculiarities in the human psyche that enable people to deny the signs of crisis. Cognitive reasons for denial include the inability to perceive one's environment in a holistic way, the inability to extrapolate to global dimensions, and the inability to extrapolate to the long term. A second group of deficiencies consists of the negation of moral responsibility and a lack of moral scruples. They are best described as moral ineptitudes, rather than as the absence of specific skills. A third group of reasons for denial are wishful thinking, self-deception, groundless optimism, and *akrasia* (weakness of will). I refer to them as 'mental habits'. I will address those three groups of deficiencies in turn under the general aim of remedying skill gaps, taking into account learning outcomes identified by Van Matre (1990) and Postman (1999) as important for environmental education. Their remediation is achieved in three consecutive stages. First, the learner has to perceive the gaps in himself and in others and realise their significance. Secondly, he has to become aware of and understand the causes of those gaps. Thirdly, the learner has to make the effort to mitigate them. Different skills and attitudes are required at each stage.

Fullan (1993:viii) argued that it is primarily learning skills that would enable learners to live more proactively and more productively with the 'change problem'. Individuals must excel as inquirers and learners. Mastery and know-how must become prime strategies. Teamwork and shared purpose must accommodate both individual agency and collective decision making for organisational learning.<sup>11</sup> Five core competencies will enable the learner to deal with complex change (Fullan, 2001): attending to a broader moral purpose, anticipating and understanding the change process, cultivating relationships, sharing knowledge, and setting a vision and context for creating coherence in organisations. The skills that are most important for coping with unforeseen challenges are summarised as learning II, or 'learning to learn' (Bateson, 1972; Postman and Weingartner, 1969:24; Perelman, 1976:244). These skills enable the learner to respond flexibly to rapidly changing challenges and thus retain his autonomy (Freire, 1986:81).<sup>12</sup>

Along with learning skills, skills of communication are also important, for imparting and justifying one's views (Meadows et al, 1992). More than to arguments of fact this applies to moral arguments. Skills for moral reasoning can be taught through dilemmas in case studies and more general principles from which case studies can be derived; along with dilemmas, alternative solutions should be offered, at least to the beginner (Fraenkel, 1977:83). The significance of communication skills becomes particularly clear in the context of global efforts toward the implementation of environmental policies and in the negotiation of global and regional environmental treaties to outpace the crisis. Also, the moral development of the learner towards achieving Ormell's (1980) 'exomotivation' depends to a great extent on communication skills.

Compared to cognitive problems with analysis and extrapolation, the negation of moral responsibility and the lack of moral scruples represent slightly different challenges as these 'moral gaps' include more significant affective or attitudinal components. They receive support from the moral nihilism and social atomism of the modern paradigm. The learner is to apply his skills of analysis and moral reasoning to follow the conceptual arguments of justice and equity why he should care. But to a great extent the learner's progress with those challenges depends on the development of a conducive attitude (Pike and Selby, 1988). Most important for the success of any reform is an attitude conducive to critical analysis and assessment of whatever object or topic requires it. This critical attitude relates to Freire's (1986) concept of 'conscientisation' through education, which will be discussed under the sixth general aim. Another difference that sets the negation of moral responsibility and the lack of moral scruples apart from the gaps discussed previously is that the former have suffered even more from widespread neglect under the current education system.<sup>13</sup>

Many learners are not encouraged enough in the present system to develop affections and show emotions. This may be regarded as a skill gap belonging into the same primarily attitudinal group as

the negation of moral responsibility and lack of moral scruples. In science education, the marginalisation of the affective is in part caused by an over-reliance on reductionism (Roszak, 2000), which has perpetuated the myth of value-free science.<sup>14</sup>

As a third group of objectives, the ‘mental habits’ of wishful thinking, self-deception, shallow analysis, groundless optimism, and *akrasia* represent gaps of a mainly attitudinal kind, but with little basis in particular values. They appear to arise neither from values nor from rationality.<sup>15</sup> Some of them represent important behavioural causes for overshoot (Lautensach, 2003), and they give rise to behaviour that mimics narrow anthropocentrism. Their prevalence is influenced by cultural factors and environmental conditions. For instance, self-deception tends to surface more widely when catastrophic events strike.

Evidently those mental habits represent fearsome opponents for our pedagogical efforts. They will need to be supplanted by a more flexible attitude allowing the learner to learn from mistakes and to adjust his life-style according to new insights, once cognitive dissonance has created sufficient motivation. Again, the skills involved in Learning II and III appear to carry great potential benefit. To escape from the pressures exerted by community and culture, however, will require that individuals and groups be liberated from oppressive dependencies and ideologies, as will be discussed further below.

#### *4. Re-orient education towards the future*

Closely connected with the remediation of skill gaps is the general aim of providing the learner with a vision for the future that takes into account the rapid environmental changes and the resulting socio-political upheavals we can predict from the current crisis. Only with sufficient vision of this kind will the learner be able to proactively cope with the rapid and widespread change the world is beginning to experience now. The change in vision will arise from changes in attitudes and values. I will explain them in turn.

Learners need to develop the attitudes and skills for “networking and visioning” (Meadows et al, 1992) in order to proactively reform current practices before their effects preclude too many opportunities. This will require that certain counterproductive views and attitudes about the future be abandoned, such as the neo-liberal’s complacent focus on the present, along with nostalgia, fatalism and groundless optimism – characteristics of the dominant concept of progress. In their place, a more flexible and proactive attitude needs to be adopted, complementing the new concept of progress as outlined under the first general aim. The learners also need to re-establish inter-human relationships to acquire a sense of time that includes a connection with past and future generations, and a collective form of knowledge (Bowers, 1993; George, 1995). To get the learners to change their attitude about the future, two educational strategies can be employed: the investigation of the crisis in the form of presently detectable trends, and the analysis of probable future scenarios to pursue ‘systematic future-thinking’ (Wren-Lewis, 1974).<sup>16</sup>

A vision of the future that is no longer encumbered by modern delusions will necessarily include a moral dimension (Fekete, 1988:i; Abram, 1985). In his vision for educational reform Sosa (1996) referred to a humanity that is capable of ensuring its own sustainable survival in a civilised form as “ethically competent”, building on Habermas’ (1984) concept of communicative competence but including the non-human world (Sosa, 1996).

There is a historical continuity in this progression of ethical development of humanity. Agreement among human communities on a set of basic needs has led to the - still evolving - concept of human rights. The first generation of human rights was civil and political in nature and was based on the cardinal value of freedom. The second generation are economic and social human rights, based on the cardinal value of social justice. At this stage a third generation of rights is needed consisting of inclusive ecological rights and based on solidarity with future generations and with non-humans. Besides turning towards ecocentrism, the learner needs to conceptualise an ethic for survival and appreciate its merits, balancing the dictates of humanitarianism and the imperatives of ecological

sustainability, amounting to a lifeboat ethic (Hirsch, 1976; Rolston, 1996:164; Hardin, 1974). Again, the interactive study of scenarios can provide the appropriate learning experiences (Delcourt and Delcourt, 2000; Milbrath, 1989) to allow learners to develop a personal value base for their future lives. This process should begin in pre-school (Shane and Shane, 1974).

##### *5. Eliminate parochialism from education systems*

The existence of intransigent barriers between disciplines and departments has been referred to as parochialism of content and form, respectively (Perelman, 1976). Both have been implicated in the failure of higher education (Orr, 1999b:232; Wren-Lewis, 1974:163-4). They inhibit all those really radical advances that depend on the development of fundamentally new ways of thinking because they confine the learner to the present. It seems that the learner can only develop a vision focused on the future by asking questions about the conceptual and administrative boundaries of academic endeavour. Such questions inevitably refer to norms and concepts outside of the discipline, which makes their discussion difficult and controversial (Brennan, 1996:95). This practice has had particularly detrimental consequences when multi-faceted problems are reframed as technical and are addressed by technologists through technical means (Sosa, 1996:49). What Whitehead (1967:6) called “the fatal disconnection of subjects” has reduced academia to a cacophony of mutually unintelligible professional jargons ill equipped to facilitate the kind of transdisciplinary work required to cope with the crisis. An example is the lack of engagement and dismissive contempt with which James Lovelock’s hypotheses were received by those who should have known better.

We can identify four problems caused by parochialism. It reinforces the curricular compartmentalisation of environmental education; it tends to cloud people’s vision for the future, as pointed out above; within a discipline, it hinders the asking of important questions about ends, means and norms, which leads to inadequacies in professional ethics; and it disposes people towards a misleading assessment of risks and novel concepts, diverting our attention from the crisis. The latter two effects arise particularly from an inattention to transdisciplinary aspects of investigation both by teacher and learner.

Unfortunately the educational system shows a great capacity for reproducing parochial thinking and parochial structures. By ignoring the limits of their discipline and getting away with it, specialists and professional organisations are implicitly, and perhaps unwittingly, communicating to the learner that such behaviour is morally acceptable despite its adverse outcomes. This is particularly true for the university sector, where the criteria for competency and ethics for many professions are defined and perpetuated (Lutzenberger, 1996). The divisions between disciplines resonate with divisions between curricula and between minds, to the detriment of everyone. The learner is urged to specialise early, which hinders the development of “that quality of mind that seeks out connections” (Orr 1992:92), and little attempt is made to openly discuss the learner’s professional ethic.

This parochialism of content is aggravated by a parochialism of form, with physical divisions between academic disciplines often insurmountable to all but the most independent learners, indoor confinement of educational activities, and an almost universal tolerance for aesthetic ugliness and environmental inefficiency in building design (Orr 1992:88). As long as universities insist on structuring teaching and research by means of the traditional disciplinary boundaries, they will not be able to give full attention to the most urgent problems of the day, and specialist and overly reductionist approaches continue to be handicapped by cognitive and moral tunnel vision. Given its propensity for reproduction, parochialism is unlikely to fade away in the absence of well-designed reforms.

What distinguishes the more competent among professional practitioners is how they deal with those problems caused by parochialism. But individual efforts need to be reinforced by educational reform. The reform of content focuses on new curriculum elements on ethics, factual beliefs, attitudes and skills. The reform of form is directed at institutional structures and practices such as administration, constitution, research funding, physical structuring of the learning environment and the organisation of teaching and learning. Each aspect affects the others, but my general focus on curriculum predicates a certain bias towards the parochialism of content.

As a first strategy, the learner needs to recognise that in the light of the crisis ecological considerations belong into every human endeavour, and this recognition needs to be reflected both in the curriculum and in the organization of the institution (Catton, 1980). Environmental issues are complex and cannot be understood through a single discipline or department. This means that the educational activities have to transcend the confines of discipline-centric institutions. Multidisciplinary<sup>17</sup> curriculum reform should focus on the inclusion of environmental topics and on highlighting the specific points of relevance of a discipline to its environmental context (Madsen, 1996:83; Van Matre, 1990). This would best be based on the holistic concept of Earth Systems Science to emphasise the totality of the interdependent relationship between natural and social systems (Fien, 1993; Margulis, 1997a:312), but without lapsing into a mechanistic view of the natural world, as such a view would only reinforce the technological imperative. Within the university, relativistic attitudes among the various disciplines are likely to weaken under this multidisciplinary effort. The comment that an important concept lies outside one's area of expertise should no longer be accepted as an automatic excuse for ignorance or lack of interest by teacher or learner.<sup>18</sup>

This points to a second strategy to counteract parochialism of content. Gaia theory can also be of paedagogical help in inducing an attitude of respect, humility and wonder, and such explicit value objectives must be included in every topic and pursued in close connection with factual information. A truly transdisciplinary approach to learning cannot separate issues of fact from issue of value (Rolston, 1996:174), and parochialism in valuing is as undesirable as parochial cognition. Increasing the attention to overarching values in the teaching of all disciplines pertains to sustainability, the protection of ecosystems and to ecocentrism. The learner must recognise the inadequacy of the fashionable elastic cultural pluralism in current learning materials and the resulting *laissez-faire* attitudes in the face of the imperatives of the crisis (Rolston, 1996:162).

Despite this anti-relativistic stance, a degree of diversity will be preserved by the use of guiding values rather than comprehensive values (Tam, 1998:77). The principles of integration and diversity are mutually dependent and must be carefully balanced, as with all sustainable projects (Porritt, 1984:165). With respect to the universal cognition of democratic values, this has been successfully implemented in many diverse countries in the UNESCO's global Associated Schools Project (Meyer-Bisch, 1995). The university community needs to act in transnational, international, global ways where national sovereignties divide humanity when we need deeper solutions, respecting the larger communities of life on Earth. Thus, moral persuasion may be brought to bear in situations where legal recourse is prevented by national boundaries (Rolston, 1996:185).

Counteracting moral relativism is only one aim of this multidisciplinary attention to values. The universal claims of modern anthropocentrism are even more harmful than relativism, and the aim of the reforms is to replace this set of universal values with the more suitable but equally universal values of sustainability and ecocentrism.<sup>19</sup> A focus on value objectives may particularly be effective in reducing the parochialism of form and content in science education (Wilson, 1984) and limit the power of scholastic dogmatism. The future scientist cannot pretend to be an indifferent observer or a merely clever academic critic of our environmental practices forever, without paying the price of being dismissed as an irrelevancy because of his detachment.

The third strategy to counteract parochialism focuses on the manifestations of the crisis. As I argued under the preceding aim, education about the crisis is essential for the development of an environmental awareness and for a productive vision of the future. This education can only succeed if it takes a transdisciplinary approach, and in that capacity it will also counteract parochialism. Skill-related objectives and values should be pursued together in a multi-stage, confluent approach.<sup>20</sup> Each of those stages provides criteria for formulating learning outcomes and for assessment, and each is to be addressed in a transdisciplinary manner. Education about the crisis is used in this context as a platform to implement a multidisciplinary and transdisciplinary approach to academic inquiry. Besides making academic barriers less visible to the learner, this approach can counteract parochialism of content by reducing the widespread tendency among specialist circles to pretend that one knows something rather than to admit that one doesn't (Postman, 1997:60). Admission of ignorance is a requirement for further inquiry.

Parochialism of form can be addressed more specifically by increasing the amount of administrative and political power allotted to teachers and by reforming teacher education (Tam, 1998:76). Also, universities must again contribute their share to universal public education by deploying their significant educational infrastructure to offer opportunities for lifelong learning to all citizens through courses in affordable form, which are necessary for the ongoing development of ecological citizenship skills and critical understanding (Mudd, 1997; Orr, 1992). In this way the universities could meet the urgent need for the public to possess at least the first level of awareness - cognizance that important environmental problems exist that merit immediate and steadfast attention. Given the short-term, self-interested mentality that prevails in the global culture at large, as well as the media's inability (or unwillingness) to help, universities can teach the general public the importance of long-term thinking about the environment and, for that matter, about more enlightened self-interest (Madsen, 1996:86). Finally, the ideal of freedom of academic inquiry which has already become severely limited under neo-liberal policies (Margulis, 1997b; Laney, 1990; Suzuki and Dressel, 2002) needs to be re-implemented under the constraints of intergenerational equity, ecological sustainability and environmental justice (Orr, 1992:14).

#### *6. Empower the learner to take action*

A recurring theme across these general aims has been the liberation of the learner from exploitative dependencies acting from within the learner and from structural constraints acting from without. This liberation is required to enable the learner to take action on newly found insights and convictions. The learner becomes liberated as a result of empowerment, which in turn is a result of conscientisation. I will explain now what I mean by empowerment in this context and how it is to be achieved. I will then explain the process of conscientisation as the major avenue towards empowerment.

I argued in connection with the failure of higher education that educators have the moral duty to re-plan their activities according to the goals of sustainability. The education system in its present form often fails in this duty because through its inattention to values and its inability to convey the essential critical skills it does not encourage action in the learner. To begin with, empowerment therefore must include those critical skills, as well as the requisite moral norms and ideals. Those outcomes of enabling and motivating the learner are subsumed under the preceding five major aims. They will facilitate the development of the understanding, attitudes and skills of political literacy which promote participation in a variety of forms of social action to help improve and maintain environmental quality. They will allow the learner to discern which frameworks are part of the problem and which can be part of the solution. More specifically in the context of my proposed pedagogy, the learner will need to develop the cognitive skills to identify and evaluate elements of anthropocentrism in prescriptive documents, written and spoken comments and academic texts – provided he has taken on board an ecocentric ethic as was argued under the second general aim.

Empowerment also includes a motivation for action to avoid 'paralysis by analysis' while retaining a sound balance between reflection and action. In the context of liberation, this motivation stems from a self-image that prioritises autonomy and an appropriate measure of self-confidence (Knapp and Goodman, 1981). It also rests on strongly held values as specified under the other general aims. This motivation must be tempered and channelled along communitarian ideals - Ornell's (1980) 'exomotivation' is required here - in order to prevent atomistic individualism (Haste, 1996). With regard to the aims of my pedagogy, this will enable the learner to operate as an innovative transformer to counteract consumerist and non-sustainable tendencies in society and to mobilise his peers.<sup>21</sup> Without a broader support base of such politically active, engaged and informed citizens the environmentalist movement runs danger of becoming undemocratic (Orr, 1992).<sup>22</sup>

The education system also infuses the learner with detrimental beliefs, attitudes and values that make it even harder for the learner to become active in the appropriate ways. In order to facilitate empowerment the reformed education needs to provide some help for the learner to free himself of the effects of those counterproductive outcomes of prior learning, to unlearn what should never have been taught in the first place. Acquiring the skills and attitudes for selective unlearning represents a

significant part of the aim of environmental literacy (Orr, 1992). Unlearning can be facilitated by diminishing the effects of habituation the learner constantly experiences in the traditional educational settings. An effective pedagogy for empowerment needs to counteract habituation at the source, to largely prevent it from occurring in the first place, as well as retroactively counteract its effects. This need arises from the important role played by habituation in leaving learners with cognitive and moral gaps.<sup>23</sup>

In addition to becoming enabled, motivated, and capable of unlearning, the learner also needs to become judicious in her choice of sources. Even a perfect participatory democracy consisting of liberated, environmentally literate citizens could not ensure that they adopt sustainable ways of living unless they had access to accurate information about the state of their habitat. Unfortunately, much of the publicly available information about environmental conditions has been subverted by lobby groups who consider it in their interest to perpetuate the *status quo* and who exploit their power over the media for those purposes (Suzuki and Dressel, 2002:340). A pedagogy for sustainability must help the learner to overcome the obfuscation created by strategies such as greenwashing<sup>i</sup> and brownlashing<sup>ii</sup>, to become skilled in obtaining accurate information when necessary.

The empowerment of the learner as an autonomous agent is not intended in an atomistic libertarian sense. Rather, empowerment is to be understood as a means for the learner to mobilise and express her internal resources and to engage in compassion, an important component of non-violent resistance against oppression (Shiva, 1999b). The difference is made by requisite values as educational outcomes. As an autonomous, empowered agent the learner is also more likely to accept moral responsibility towards other living entities, which, as we saw earlier, would remedy a significant moral deficiency in learners. Conversely, tribalistic behaviour of groups tends toward the immoral. Furthermore, the influence of consumerism can be effectively diminished if the learner finds his own purpose in life and substitutes it for the falsely individualistic ideal the consumer society is attempting to instil in him (Suzuki and Dressel, 2002:320).<sup>24</sup> In summary, the requirements of enabling, motivating, unlearning, overcoming the subversion of information and accepting moral responsibility for the environment circumscribe what empowerment means in the context of my proposed curriculum and what needs to be accomplished towards that aim.

Educational strategies designed to achieve empowerment of the learner are summarised under the concept of conscientisation by the Freirian school. I will now outline the process of conscientisation and explain how it can achieve the empowerment of the learner. It will become evident that conscientisation draws together most of the learning outcomes under the six general aims.

According to Freire (1986:36), conscientisation refers to the attempt through education to enable the learner to progress from a state of 'submerged consciousness' to a state of critical consciousness where he becomes aware of oppressive and exploitative dependencies, and where he becomes motivated and informed to counteract those dependencies in solidarity with others (Findlay, 1994). In the context of this pedagogy for sustainability, critical consciousness must extend to the recognition and transcendence of *akrasia* and other mental habits contributing to overshoot as described earlier. I would also suggest that conscientisation, true to its semantic origin, includes as a significant moral component the development of an ecological *conscience* in the learner, functioning as the moral component of the learner's new substantive concept of progress. While consciousness governs thought

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<sup>i</sup> Greenwash involves the deceptive appropriation and re-definition of the terminology of ecology and conservation to obfuscate non-sustainable agenda by those whose agenda have traditionally been regarded as incompatible with such concerns. Examples for greenwash include the discourse of 'sustainable growth' and 'sustainable development' in most of their manifestations, the corporate practice of outsourcing polluting industries abroad, and the use of deceptive media releases (Edwards, 1999). Grierson (1998) described how the tactics of the advertising industry of employing visceral shock, intellectual shock and moral shock tend to erode people's capacity for empathy.

<sup>ii</sup> Brownlash is the common description for the practice of public defamation and intimidation of environmentalists and the misrepresentation of their agenda (Ehrlich and Ehrlich, 1996). It also involves deception but relies less on the misappropriation of ecological terminology and more on direct affront (Beder, 1997).

and sentiment, conscience channels action – which is, after all, what empowerment and liberation is all about. However, our pedagogy of liberation derives its immediate legitimacy from the imperatives of the global crisis, not exclusively from considerations of interhuman justice as in the case of other liberation pedagogies (Freire, 1986). Its goals are informed by ecocentrism rather than by anthropocentric communitarian or libertarian ideals. The kind of moral conscience called for in this context, therefore, is quite a different one than what Freire might have intended.

Despite those differences between the Freirian interpretation of conscientisation and my own, its pursuit in the classroom can benefit from the significant insights provided by Freirian liberation theory. One of those insights states that no educational process can be neutral or disinterested with respect to existing power relationships (Grant and Zeichner, 1984:15), as some liberal educationists (such as Peters, 1966) claimed. Once the learner has realised that education remains inevitably partial, she is more likely to develop a reasoned stance that may differ from that of her teachers.

An essential component of conscientisation of the learner is the development of counter-hegemonic critique. Ghandi noted the importance of values in liberation when he asserted that “no tyranny can enslave a people that considers it immoral to obey its unjust laws” (quoted in Shiva, 1999b:224). In the view of the ecosocialist school of educational reformers, those power relationships as manifested in capitalist society represent a crucial obstacle on the way towards a sustainable society (Fien, 1993:33). The dominant concept of progress and the underlying values seem no less significant in maintaining power relationships (Lautensach and Lautensach, 2004). Without the attitude and skills for counter-hegemonic critique one oppression will merely be replaced by a new kind of oppression (Freire, 1986:122). Conscientisation, therefore, is to be pursued through a critical analysis of dominant ideologies, power relationships and their underlying values, regardless of whether or not they are identified as oppressive. As argued under the third general aim, this attitude must be complemented by analytical skills, to prevent the “absence of doubt” (Freire, 1986:23). Differences in worldviews aside, all liberation pedagogies share this essentially counter-hegemonic agenda.

The educational strategies to be employed under the heading of conscientisation overlap considerably with those for the preceding five general aims. Specifically, re-defining progress, embracing ecocentric ethics and re-orienting oneself towards the future can contribute towards the process of conscientisation by inducing the learner to question dominant assumptions. This will counteract the perpetuation of the consumerist ethic and encourage learners to favour the value of sufficiency as a form of liberation (Ekins, 1998). It will also encourage a proactive attitude in the learner (Freire, 1986:81) and empower him to act as more than a mere victim once the crisis comes to a head in his own community. In turn, the process of conscientisation caters not only towards liberation but also towards the other general aims.

Conscientisation is best pursued through “critical and liberating dialogue” among teacher and learners (Freire, 1986:52; Layder, 1994:138), a reflective process that must not rely on power inequalities in the classroom.<sup>25</sup> The dialogue must be conducted in a variety of settings besides the traditional classroom. Freirians have advocated ‘critical praxis’ - the use of teaching strategies that are consistent with one’s goals (Freire, 1986). Critical praxis integrates reflection and action and thus results in conscientisation. Its methodology includes enquiry-based learning, values exercises, ideology critique, community contact, and social action of various kinds (Huckle, 1991; Starr, 1991; Fien, 1993).<sup>26</sup> As a further extension of conscientisation, a teaching methodology needs to be developed that can serve to conscientise educators and transform them into true environmental educators (Fien, 1993; Porritt, 1984:170).<sup>27</sup> It is the teacher who is in the best position to resist the ‘paternalistic subsidisation’<sup>iii</sup> that tends to perpetuate the *status quo*.

The chances of success of any educational reform can be increased if it anticipates and pre-empts political opposition. Revolutionary changes are frequently compromised by backlash effects, and contemporary movements such as environmentalism and feminism are no exception. The proposed pedagogy seeks to develop a critical consciousness that will put into question the ‘business as usual’

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<sup>iii</sup> The term “paternalistic subsidisation” was coined by Freire to describe support without empowerment.

approach to 'development' and that will fundamentally challenge the social values, structures, authorities and conventions that support that approach. Specifically, it is set to destabilise the conceptual straitjacket imposed on the education sector by the globally dominant ideology of progress. This is likely to result in political difficulties that a successful pedagogy must weather (Fien, 1993).<sup>28</sup>

It is important for this program of critical pedagogy to prepare the learner for her inevitable encounter with backlash in order to minimise its impact. With regard to the environmental movement, backlash manifests itself primarily in the two ways in which information is being subverted, commonly referred to as 'greenwash' and 'brownlash'. Both greenwash and brownlash rely extensively on the near monopoly exercised by a minority of corporate entities over the mainstream media (Edwards, 1998; 1999). Because of the proximity of the mass media system to the network of corporations it must necessarily share the same basic assumptions and the same commitment to justifying the direction society is taking in response to the directive efforts of corporate groups. The media, therefore, are not only unlikely, they are structurally incapable of offering root cause analyses of the global environmental crisis (Herman and Chomsky, 1988:17). Consequently their reporting of environmental issues tends to be superficial, selective and often misleading.<sup>29</sup> As argued above, the ability of the learner to recognise and accurately assess tactics of greenwash and brownlash and to interpret media reports correctly represents an important component in her empowerment. The learner must become able to recognise the inadequacies, half-truths and untruths contained in such reporting, and to attempt her own, deeper analysis, relying on cognitive skills and affective dispositions. As essential representatives of civic society (Henderson, 1999), non-governmental organizations and the Internet may be able to contribute some counter-hegemonic support for these educational efforts. However, once the learner has begun to bypass some of the subversion the effort is likely to pay off, with conscientisation and empowerment continuously strengthening each other. In this way, the proposed pedagogy can pre-empt some opposition.

## Summary

Several common themes emerge that shape the general focus of this pedagogy for sustainability. It takes a holistic approach across all the dimensions of human development: the intellectual, emotional, spiritual, moral and physical. It also extends over all academic disciplines. It also takes a global focus, despite the national idiosyncrasies of public education systems and the ultimately local or national character of educational reform, because only a global vision can inform appropriate local measures. The overarching aim of our efforts for reform is to facilitate a sustainable existence for the species *Homo sapiens* on the planet Earth. The fact that specific regional ecological, cultural, political and individual conditions may differ in their conduciveness towards that aim does not take away from its global applicability. That is to say, no region, community, culture or individual should be entirely exempt from the obligation to help. But beyond that global obligation we recognise differences in degrees of obligations, in potentials for improvement, and in potentials for making a difference. Those differences may be geographical, national, cultural and individual in nature.

Secondly, the pedagogy places an emphasis on values. My analysis of the crisis and its causation (Lautensach, 2003) indicated that without a change in prevailing values the crisis could not be effectively addressed. I also argued (ibid) that value education is possible, desirable and practical. As far as educational solutions are concerned, affective learning outcomes thus must take priority over cognitive ones. Others have come to similar conclusions (Giroux, 1981; Sylvan and Bennett, 1994; Toffler, 1974; Bosselmann, 1995). In many respects, affective learning outcomes can be considered the most important results of the educational process because it renders other outcomes more achievable. It also can culminate in exomotivation (Ornell, 1980) which would make the educator's task easier. Another reason why this pedagogy is focused on values is because most curriculum reforms have tended to neglect the essential role played by education in determining values, as was documented in chapter seven. Not surprisingly, few of those reforms lived up to the expectations of their protagonists. This proposed curriculum is supposed to address that gap.

This emphasis on values has to be explicit and selective. Much of the currently taught values are contained in the hidden curriculum and the null curriculum, which have tended to remain conservative

even in the face of some progressive reforms in explicit curriculum and teaching methodologies. The issues presented to students for resolution are posed within a pluralistic, consensus view of society, which implies the equality of all values and opinions and ignores the role of conflict and the use of various forms of power in environmental decision making (Maher, 1988). This lack of direction necessitates that, as the foremost agenda in the new curriculum, values must be presented explicitly and as *unequal*. Efforts at increasing social justice must be reconceptualised with the ecological crisis as the highest priority.

A third recurrent theme in my pedagogy is its critical orientation with respect to dominant ideologies. The current widespread emphasis in tertiary education on discipline mastery has served to reinforce the dominant ideologies of progress and anthropocentrism through habituation via the hidden curriculum. The curriculum I am proposing here is oriented towards ecological validity and sufficiency, focussing on destabilising the dominant anthropocentric ideology of progress. This destabilisation of a hegemonic ethic and its replacement with an ecocentric alternative becomes possible when a sufficient number of learners develop a critical consciousness, which empowers them to take action.

This critical pedagogy for sustainability shares with the liberal model of education as proposed by John Dewey and others a certain atomist bias towards the learner as a thinking, feeling individual who can be empowered through self-realisation. An important prerequisite for the learner to be able to take action on his convictions and aspirations is that he feels confident, safe and competent to do so. This feeling is predicated on a certain degree of liberation from dependencies of habit, ideology and institutional context. The most significant element in those agenda of liberation is the subversion of consumerism and the mitigation of the conceptual and moral constraints it imposes on communities and individuals. In that sense, my proposed pedagogy calls for certain strategies and methods adopted from Freirian liberation pedagogy. Critical pedagogy contributes a significant body of theory on empowerment of the learner; and it provides a modicum of counterbalance to the influence of technocratic educators who dominate the professional development and training especially of new teachers (Bowers, 1993).

Lastly, my proposed curriculum emphasises action. For the educator this means that once a clear consensus on several ethical issues exists, one should act on these rather than suspend all attempts at moral education just because one cannot reach agreement in some remaining areas (Dewey, 1966; Etzioni, 1995) – or, as Bowers (1993:217) put it, “we do not need a master plan, only a clear sense of the direction in which we must move, and a full sense of awareness of the consequences if we fail”.

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## Appendix

This table shows a summary of the proposed curriculum, specifying important learning outcomes under the six general aims. Teaching methods are specified towards the bottom.

<b>GENERAL AIMS</b>	<b>1. Re-define Progress</b>	<b>2. Replace Anthropocentrism with Ecocentrism</b>	<b>3. Remedy Skill Gaps</b>	<b>4. Re-orient Education Towards the Future</b>	<b>5. Eliminate Parochialism</b>	<b>6. Empower the Learner to Take Action</b>
<b>Negative outcomes (to be counteracted)</b>	Consumerism and its driving forces; Materialism; Scientism and technologism; Technological interpretations of sustainability; Neo-liberal concept of personal liberty; Moral nihilism and materialism; Cornucopianism; Defining progress as economic growth; False potential of laissez-faire policies; Colonialist progress and its driving forces;	Anthropocentrism in all forms; Human-nature dualism Freedom from nature/dominion over nature; Anthropocentric interpretations of property.	Cognitive reasons for denial, including the inability to extrapolate; wishful thinking, self-deception, groundless optimism, <i>akrasia</i> ; Negation of moral responsibility and lack of moral scruples;	Fatalistic attitude towards the future; Nostalgic yearning for the past; Groundless optimism; Scholastic dogmatism in science education;	Moral relativism, Liberal pluralism, <i>Laissez-faire</i> attitude to academic inquiry and anthropocentric influences in it; Blind spots for the limits of one's academic discipline;	Dependencies on habits (e.g. urban lifestyle, consumerism), institutions (e.g. the services and products of multinational corporations), ideologies (e.g. the 'work ethic');
<b>Positive outcomes (to be encouraged)</b>	Personal property interpreted as responsibility to care; sufficiency; Adopt a way of life in reflecting efficiency, restraint, adaptation, structural change (*); respect for limits to growth; recognise the interdependence of species and obligations to future generations;	A critical attitude towards anthropocentric practices; Extend communitarian values (justice, love, wisdom, fulfillment) to the non-human realm; humility; wonder and awe of nature; Value sapience & sentience, quality of experience in non-humans; Adopt Gaian ethics;	Holistic view of one's environment, extrapolation to global and to the long term ('ecological literacy'); Analysis of values (including one's own); acceptance of personal moral responsibility for the environment, and personal accountability in speech and action; attitude to act on one's values;	A vision of the future that accommodates environmental change and ecological constraints; Empathy with other people and future generations; A positive attitude towards change; thinking in post-industrial and zero-growth scenarios; apply scientific and ecological analysis to	Moral universalism with respect to sustainability and ecocentrism; extrapolative skills as in no.3; Cross-disciplinary environmental awareness;	Motivation for action; Striving for equity in access to resources, consumption levels, reproductive obligations while respecting ecological limits; 'counter-hegemonic' attitude to question dominant ideologies, authority and conventions; Conscientisation of

<p><b>SPECIFIC EDUCATIONAL OBJECTIVES</b></p>	<p>Develop a sense of self-worth; Critically challenge pro-natalist attitudes and policies; Question the 'work ethic';</p>	<p>Ecocentric spirituality; Recognise intrinsic value and evolutionary continuity;</p> <p>Adopt meta-values (survival of civilisation, extended communitarianism); immersion in values as opposed to distancing; make it socially acceptable to show affection; recognise the counterproductive nature of anthropocentric assumptions;</p>	<p>Learning II and III;</p> <p>Develop life skills; Capacity for learning (esp. Learning II) and for flexible response; Evaluate hidden assumptions (e.g. in the technological imperative); Develop affections and show emotions;</p>	<p>other fields; Precautionary attitudes to environmental risk-taking; Awareness of historical continuity;</p> <p>Apply analytical skills to evaluate traditions and habits; apply skills required for adaptation to change (as in no.3): "Become acquainted with the means of your survival". Recognise the connection between cultural adaptation and sustainability; show an openness to ideas about the future but recognising uncertainty; develop a personal value base for one's future lives;</p>	<p>Use Earth systems science as an object of study and as a tool for study; Analyse curriculum for counterproductive contents; Structural reform within educational institutions Recognise values in science;</p>	<p>teacher and learner; Personal growth without atomistic paralysis;</p> <p>Critical analysis of the curriculum by the learner; Deconstruct the values and processes behind decisions about the environment; Detect and oppose greenwash (analytical skills); Effectively counteract brownlash; Learn not to be moved by crowds;</p>
<p><b>METHODS</b></p>	<p>Extend the four principles of bioethics to future generations; strengthen the values of liberty and autonomy; examine the reasons for the global environmental crisis; teach ecology in transdisciplinary ways; conceptualise the Earth as a quasi-closed system.</p>	<p>Education <u>in</u> and <u>for</u> the environment; make values explicit; critical examination of value statements; cross-disciplinary earth systems approach;</p>	<p>Establish connections with concepts the learner feels strongly about; Exercises involving the solving of environmental problems relying less on reductionism;</p>	<p>Explore future scenarios; associate with environmentalist NGOs; Use utopian scenarios as a teaching tool to identify priorities;</p>	<p>Include ecological models, Earth systems science and ecocentric values into all disciplines; Institutional reform to penetrate academic barriers and to facilitate local self-sufficiency; targets of this reform are teacher education, continuing education, granting policies and management.</p>	<p>Analyse media reports for motivations and implicit messages; Critical dialogue and 'critical praxis';</p>

(\* ) This item applies to more than one general aim.

## Endnotes

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<sup>1</sup> Obviously, important values are also acquired prior to and outside of formal education. However, this fact in turn provides a further justification why educators ought to use their influence on the learner to counteract what negative values are reaching the learner through other channels. Such 'informal education' cannot be directly controlled through policy, whereas formal education can be. Moreover, the considerable extent to which formal education fails to equip graduates with appropriate values and attitudes suggests that even a modicum of effort in the right direction may have significant effects.

<sup>2</sup> As Foucault has observed in another context, only a very small minority, situated at the top of the societal pyramid, engages in oppressive behaviour out of a conscious choice they made free from duress. By his or her own habitual (and at times compulsive) patterns of consumption, a consumer at once contributes toward the oppression of others and is being oppressed. At the same time, the consumer is continuously assured by advertising that the road toward maximising their personal freedom (another unquestioned ideal) is built on maximum consumption, and, worse, that failure to follow this course will result in loss of face. In this way, most members of consumer societies have become both oppressed and oppressors. An analogous effect, where some members of a disadvantaged gender oppressing their fellow victims, has been recognised in the feminist literature.

<sup>3</sup> By making explicit the learner's criteria of self worth, a situation of cognitive dissonance (Festinger, 1957) can be created which the learner has to resolve in some way. The dissonance arises from contradictions between the criteria of self worth (say, social status) and general moral values held by the learner (say, equity). A similar dialectic process underlies the technique of values clarification in moral education (Raths et al, 1978) and the critical analysis of dominant ideologies, such as consumerism (Sagoff, 1997) and technologism (Orr, 1998). A successful resolution of this conflict by the learner can serve as a starting position to initiate a critical examination of the dominant concept of progress.

<sup>4</sup> Such a notion of freedom may appear far-fetched to many. It is significant in this context to note that many non-Western cultures had no concept of freedom or of its absence (or even suitable words in their language) until they were subjected to the colonial experience (Simone, 2001:33).

<sup>5</sup> This can employ such descriptive models as thermodynamics, basic ecology, the flow of raw materials, footprint analysis and trend extrapolation as it relates to the crisis; a simple beginning would be to convince the learner that no process or object can be without limits. Specific methods for teaching this objective have been proposed by Orr (1992:109-124), Ehrlich et al. (1995:95), Griffiths (1974), Daly and Cobb (1994), and Van Matre (1990:25).

<sup>6</sup> In the absence of a changing environment, an ability to adapt manifests itself as the capacity to learn (Fullan, 1993). "The reality of evolutionary success demonstrates that fitness' is not simply about 'adapting to an environment', but rather the continuing improvement in the capacity to grow and build ever more connections in more varied environments (we define growth and evolution as continuously making more extensive and increasingly complex connections inside the growing organism and with the varied outside environments)." (Land and Jarman, 1992: 30).

<sup>7</sup> Under an ecocentric ethic, land is regarded as no-one's property to sell or give away. Its value cannot be quantified because it is sacred. Land gives meaning to the lives of the people through mythical connections. This view is entrenched in the ethics of many indigenous cultures.

<sup>8</sup> The development of a critical attitude becomes easier if the learner already holds certain limited values towards non-humans, in other words if he subscribes to a weak form of anthropocentrism. Published proposals for an ecocentric education tend to be guided by such values (Madsen, 1996; Orr, 1992; 1999b). The learner can be assisted to make this realisation of absolute dependence through participatory, experiential learning in the sense of Dewey's 'learning by doing', applied to practical activities of growing one's own food or survival training has led to significant learning in this respect (Van Matre, 1990; Werdell, 1974). Values tend to arise out of experience, not discussion. Successful activities for experiential learning include the recalling, relating, and sharing of experiences. This means that the traditional formats of seminars and lecture must be complemented – though not replaced - by other, more suitable venues, in order for the learner to "recognise the other half of the world" (Suzuki and Dressel, 2002:349). The Wilderness Awareness Schools in the US have set an impressive and successful example in this respect. The learner's feelings for conservation will develop spontaneously, as an empirical consequence of the experience (Ehrenfeld, 1993:3). Paul Shepard (1998c) argued that during adolescence a bonding with

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nature has to take place in order to create a sense of identity and security. If this does not happen, no true reverence for the Earth will be developed, and a society will develop pathological practices.

<sup>9</sup> Experiential learning again features prominently as a teaching method of choice (Perelman, 1976; Carson, 1984). Personal and direct contact with animals may lead the learner to the realisation that many animals share with humans a measure of sentience and possibly sapience and that they therefore value a quality of life (Shepard, 1998a). The spreading of this realisation has greatly facilitated the acceptance of animal protection movements and can be extended towards a justification of intrinsic value in every living entity (Rolston, 1996:174). The simple moral dictum, 'do not destroy what you cannot create' can work well with younger learners (Eggert, 1999:9). Fox (1994) devised strategies to teach children empathy for non-humans.

Strategies for value education include *laissez faire*, moral development, inculcation, values analysis, values clarification, experiential or action learning, confluent education and behaviour modification (Caduto, 1983). An integrated approach involving all eight strategies combines versatility with effectiveness (Ryan, 1981:31). However, in the more specific context of teaching values for sustainable living and ecocentrism a more eclectic approach appears in order. For morally heteronomous learners (meaning, they subscribe to a variety of ethics), an inculcation strategy involving modelling and systematic action learning appears more effective than the frequently advocated approach of values clarification (Raths et al, 1978). Objections in principle against value inculcation, frequently voiced on liberal grounds in relation to other aspects of education, appear invalidated by the weight of the imperative of sustainability. Polarisation of the classroom can be lessened by structuring the teaching of values as a cooperative enquiry (Tam, 1998:9) and the development of personal agenda in pursuit of communitarian values (Etzioni, 1995). For the purpose of teaching ecocentric values in a transcultural context the approach of confluent education might prove most effective. It is based on the assumption that cognitive and affective education are inseparable and seeks to elicit and include emotional resonance in the learner and to include it into the learning experience (Silver, 1976). This tends to be especially effective in learning situations where the establishment of cross-cultural connections between nature and ethics is important (de Silva, 1997; Knapp, 1983). The confluent teaching of values is to focus more on process than on fixed outcomes. The learner must be allowed to go through the steps of prizing, choosing and acting free of duress (Kirschenbaum and Simon, 1974).

<sup>10</sup> Value-related learning outcomes can include the acquisition or improvement of a particular behaviour or ability, the development or improvement of a product, or the participation in a values-related experience (Fraenkel, 1977). The teaching of those values can employ the re-direction of remaining spiritual elements in Western cultures (Bowers, 1993:50,206; Ehrenfeld, 1993; Daly and Cobb, 1994). In a globalised world it is also becoming easier to emphasise communitarian values and holistic sentiments through the principles of cooperative enquiry (Tam, 1998:63,253; Haste, 1996; Pybus and McLaughlin, 1995). The value of love can be communicated to the learner by de-emphasising reductionism (Van Matre, 1990:120-8). The most ecocentric and holistic environmental ethic, Gaian ethics, is best advocated by an education that complements scientific aims with affective ones (Lovelock, 1991; 1995). Volk (1998) described some learning exercises on geophysiology that are designed to familiarise the learner with the Gaia model and at the same time develop an affective relationship with the global ecosystem as a living entity. At a conceptual level, the Gaia model can also be used to allow the learner to arrive at a rationalisation of intrinsic value (Wilson, 1984).

<sup>11</sup> Skills for critical analysis can be taught by assigning problem-solving tasks that become increasingly self-directed as the learning progresses (McPeck, 1981; Woods, 1987). Extrapolative skills can also be covered by this approach (Madsen, 1996:82), such as the inability to perceive holistically, to extrapolate globally and to the long term – what David Orr (1992) called 'ecological literacy'. Temporal extrapolation can be encouraged by simply asking Garret Hardin's (1993) question, "and then what?" The resulting propensity for putting knowledge into perspective has been equated with 'wisdom' (Ekins, 1992:114). Educational strategies have been developed for the development of a global perspective (Gough, 1987:50), and towards an understanding of the relation between the global economy and the Earth (Orr, 1992:4). Another important group of analytical skills relates to assessing risks more realistically and to counteract reification. Problem-solving tasks to teach those skills have been suggested by Fien (1993:12) and Orr (1992).

<sup>12</sup> Some educational strategies for learning II have been proposed by Michael (1997). Education through problem-solving can be beneficial in this context as well (Torbert, 1972), especially when they take a more

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existential/systemic approach (Perelman, 1976:236; Lovins, 1977; Hall, 1986:3-151; Daly and Cobb, 1994:401-55) and include the diversity of values (Robottom, 1987:327).

<sup>13</sup> Teaching methods for value education were discussed in connection with the preceding general aim of ecocentrism. Experiential or action learning relies on and reinforces the skills of managing group dynamics, interpersonal communication and problem solving (Knapp, 1983:24; Werdell, 1974) - all highly important learning outcomes for sustainable living in a future world in crisis. Confluent learning preserves the connections between cognitive and affective outcomes and may allow the learner to associate environmental objects with concepts he already feels strongly attached to.

<sup>14</sup> This bias could be mitigated in part by giving holistic disciplines such as ecology a greater representation and through the deliberate and explicit inclusion of values as intricate parts of science topics (Orr, 1992). A greater reliance on holistic science in the efforts to solve environmental problems, especially for a wider audience of learners, also tends to encourage the development of a politically emancipated and ecologically literate and ecologically competent citizenry (Orr, 1992:89). However, while such measures may serve to counteract reductionist thinking they are unlikely to encourage the acquisition of ecocentric values (Lautensach, 2004). Postman (1997) suggested that all learning be assessed for its affective components, and his suggestions can be used to derive relevant criteria for curriculum revision.

<sup>15</sup> *Akrasia* or 'weakness of will' or 'moral incontinence' was described by Aristotle as the phenomenon of people not behaving in noble, rational, reflective and virtuous ways even when they have been amply instructed in what those characteristics entail and they feel quite motivated to adhere to them. The word stems from the Greek verb for 'to coddle', 'to pander to'. Much of seemingly 'stupid' behaviour is probably caused by *akrasia*, such as the consumption of environmentally harmful products or engaging in self-abusive behaviour, while being fully aware of the consequences. *Akrasia* is strengthened by the 'Cry Wolf' effect of erroneous warnings.

A first step in combating *akrasia* and self-deception lies in being able to recognise them for what they are, both in others and in ourselves. Critical skills involved in the analysis of discourse and behaviour are again of crucial importance in this respect. They enable the learner to recognise contradictions and inconsistencies, not only among various human attitudes and beliefs but also between attitudes and beliefs, on one hand, and actual behaviour on the other. At the heart of the ecological crisis, and the social crisis within it, also lies a contradiction between individual motives and collective goals, referred to also as the 'paradox of aggregation' (Falk, 1971) or 'discrepant collective effects of individual human behaviour' (Schelling, 1971; Perelman, 1976:144-5). As the learner becomes aware of those contradictions she acquires cognitive dissonance. People tend to react to repeated experiences of cognitive dissonance by modifying their behaviour, or, more often, by modifying their attitudes, or even by trying to escape altogether from the situation that generates the dissonance (Festinger, 1957). Brennan (1996) recognised the cultural construction of those counterproductive 'mental habits' and suggested that they could be weakened by teaching the learner what constitutes 'good science' and 'good philosophy'.

<sup>16</sup> Scenarios should be adapted to both global and regional settings, as with the examples of the decreasing abundance of petroleum and the collapse of regional ecosystems. The learner will be asked to infer probable changes to people's ways of life and to their views. It is to be hoped that as a result the learner develops a more precautionary attitude towards environmental risks but also an insight into the advantages of proactivity (Stern et al, 1993; Terry, 1977). In order for the full benefit of scenario studies to eventuate, educational efforts towards a more future-oriented vision must counteract two detrimental attitudes towards the future that are still widespread. They are a nostalgic image of the future as repeating the past and the present and a fatalistic view towards future developments. By discussing even far-fetched scenarios the learner can improve his self-knowledge, creativity, and interpersonal sensitivity (Livingston, 1974; Werdell, 1974) and develop openness to ideas about the future, which should counteract his delusions about constancy. An orientation towards the future must be reconciled with a thorough attention to the historical analysis of human problems in order for the learner to develop a sense of historical continuity in the interaction between humans and their habitat (Bowers, 1993:69; Merchant, 1980). Educational strategies to counteract fatalism can be aimed at the learner developing empathy with other species, other people and future generations. The examples of successful activists such as Gandhi, Martin L. King, or Albert Schweitzer can convince the learner of his power to affect the future (Orr, 1992:21; Schumacher, 1977:140).

<sup>17</sup> I am using Lemons' (1996) definitions of *cross-disciplinary*, *multidisciplinary* and *interdisciplinary/transdisciplinary* approaches to achieving depth of disciplinary knowledge, breadth of

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knowledge across disciplines, and the integration of knowledge forthcoming from a variety of disciplines. In a cross-disciplinary approach, subject matter in one discipline is viewed from the perspective of another. In a multidisciplinary approach, the perspectives and techniques of several disciplines are focused on a single problem or issue. The interdisciplinary or transdisciplinary approach is represented by attempts to integrate the theoretical and analytical perspectives of several disciplines into problem solving. An educational objective indicative of this cross-disciplinary perspective would be the learner assessing her own curriculum in her course of studies for counterproductive content and for concepts that run contrary to basic ecological understanding. Equally important for achieving a non-parochial environmental literacy is the integration of knowledge that is available only from specialised and segregated academic sources (Caldwell, 1999). Thirdly, the learner should become able to apply scientific methods of analysis to a larger number of human exploits and policies, with the aim to assess their sustainability (Lubchenko, 1998).

<sup>18</sup> Many politicians probably could not adequately explain the energy flow on the earth, or the cycling of building materials, or the basic interrelationships within ecosystems (Ehrlich and Ehrlich, 1990). Where education failed them was by relegating such knowledge into non-mandatory courses labelled as 'science'.

<sup>19</sup> A specific theme that might illustrate to the learner the importance of this universalism is the combination of cultural globalisation, material inequity, and global overpopulation. The learner needs to realise that overpopulation is not a problem confined to developing countries, that it is the global environmental impact of humanity that constitutes the decisive criterion for overshoot, and that the global extension of the anthropocentric concept of progress prevents us from addressing this problem.

<sup>20</sup> Learning about the crisis extends over three stages (Madsen, 1996): Knowing that a crisis exists (Plato's *doxa*), being able to evaluate actions and arguments in the light of the crisis (Plato's *episteme*), and personal commitment to work to solve environmental problems (Plato's *philosophia*). A successful negotiation of the current crisis would require that political leaders progress at least as far as the second stage. Society at large ought to progress as far as the third stage (the UNCED conference alone only pushed it close to stage one), which would render activist groups such as Greenpeace and its more radical variants unnecessary in the long term. Wren-Lewis (1974) suggested the use of transdisciplinary scenario studies as 'systematic future-thinking'.

<sup>21</sup> Perelman (1976) distinguished among four types of innovative pioneers who tend to drive reforms: the guru, the self-styled leader, the political revolutionary and the transformer. He argued that only the latter is capable of operating from a softworld perspective and appreciates that the proper use of information is usually a more powerful instrument than direct force. Innovative suggestions how the learner might live by example have been provided by Elkington and Hailes (1998), true to Mahatma Gandhi's dictum: "You must be the change you want to see in the world". Van Matre (1990:159) accordingly extended the well known environmentalist slogan to "think globally, act locally, be personally".

<sup>22</sup> A just approach towards a lasting state of sustainability rules out any course of action that bypasses open and active discussion of alternative policies. This indicates an important function of education, because only an educated public will be able to participate in such a discussion. On the other hand, we are running out of time in many aspects of the crisis. In accordance with life boat ethics, some of the discussions will have to take place *post facto*, but, as Thomas Jefferson asserted, there can be no justification for sweeping them aside on grounds of public ignorance (Murphey, 1998).

<sup>23</sup> Evidence from education systems in developed countries such as the UK (Beder, 2000), Canada (McLaren, 1986), Australia (Connell, 1977) and the US (Bowles and Gintis, 1976) suggests that they serve to perpetuate and reinforce social stratification by habituating the learner to the 'naturalness' of class difference and social barriers while maintaining the appearance of being meritocratic. Through habituation learners are induced to accept the moral authority of leaders and to regard such acceptance as normal and commendable (Galbraith, 1984:32-3). Personal initiative and innovation is discouraged selectively in those classes where it would be considered destabilising, through a habitual emphasis on discipline. Some of the skill gaps identified before are a direct result of this habituation, the most significant being the inability to resolve moral contradictions through moral reasoning and to act accordingly (Beder, 2000). Through the inculcation of materialistic and anthropocentric ideals that function as overriding norms, moral tensions are obscured and the learner is habituated into accepting those values as axiomatic. This anti-environmental ethic functions as the necessary moral basis for the continued expansion of consumerism and cornucopianism, among other "economically desirable values and behaviour" into the body of moral convictions of the citizen (Cohen and Lazerson, 1973: 319). Another unfortunate outcome of habituation in this sense is the 'fear of freedom', an obstacle to unlearning recognised by Freire (1986). It finds its

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manifestation in the aversion of many people to being told about ecosystem damage and unsustainable practices. It appears that habituation is not only significant as a target towards unlearning, but much of the general aim of remediating skill gaps, moral deficiencies and self image could be accomplished if we could prevent or diminish habituation. From my critique in the preceding chapter, the hidden and null curricula emerge as two major factors that bring about habituation.

<sup>24</sup> One important learning objective in this context would be becoming less susceptible to advertising and to limit children's exposure to it, as well as one's own. "Less powerful people are less powerful because they have been conditioned to give power to more powerful people and organizations" (Porritt, 1984:166), and only an education aimed at liberation through empowerment can de-condition them.

<sup>25</sup> The dialogical approach enables the learner to critically analyse his or her situation, and it counteracts the silencing effect of the oppressive situation by giving the learner a voice. Freire (1986:68) suggested that the dialogue take the form of problem posing (scenario studies come to mind), which challenges the learner, obliges him or her to respond to the challenge, and it identifies 'limit situations' in the learner's world which can be formulated as problems for debate. It also makes it possible to focus on the links between themes and their historical-cultural context (Fien, 1993). Lastly, it allows to further the learner's skills at independent analysis, evaluation and autonomous action, especially when values are included in the dialogue as a matter of course (Werdell, 1974; Bowers, 1993). The logical extension of this approach includes giving the learner the opportunity and ability to attempt a critical analysis of the curriculum itself.

<sup>26</sup> Fien (1993:74) summarised the principles of critical praxis in the context of education for the environment: "1. Learning is active and experiential, 2. Students learn how to think critically in both the logical and emancipatory senses. 3. Values education includes and examination of the sources of beliefs and values, the interests that they support, and how they are transmitted. 4. Students reflect on their lives, their histories and their futures in the light of the structural and ideological forces that influence them. 5. Students reflect on democratic alternatives to their present situations. 6. Students learn skills for political literacy in order to bring about desired changes in a democratic way."

<sup>27</sup> The actual scope for resistance that is open to the individual educator is delimited by two sets of related concepts in resistance theory (Anyon, 1983; Carlson, 1988), namely limitations and penetrations, and resistance and accommodation. Limitations are the blocks, diversions and ideological effects which restrict the autonomy of the resister. Penetrations are the conceptual understandings that serve to empower the resister. Accommodation and resistance are behavioural responses to limitations and penetrations, respectively. The potential for a pedagogy for liberation in this context lies primarily with teacher education, to increase penetrations and resistance and to diminish limitations and accommodation.

<sup>28</sup> Postman (1997:57) asserted that in the US the opposition to a true pedagogy of liberation is powerful and relies on the continuing irrelevance of most school curricula. That is not to say that those opponents are against educational innovation *per se*. On the contrary - Postman noted that they can be usually relied upon to give unflagging support to instructional television, computer-aided instruction, team teaching, whiteboards, movable chairs, more textbooks, the use of audiovisual technology, and other innovations that "play no role in effecting significant learning". He argued that "the enthusiasm that community leaders display for an educational innovation is in inverse proportion to its significance to the learning process". In New Zealand as well, the vibrant and agonised concerns of educational reformists of the 1970s have been almost entirely subsumed under a deluge of narrow-focussed technicism as part of the neo-liberal economic revolution (Armstrong, 1999). My own professional experience confirms this assessment.

<sup>29</sup> Edwards (1998) lists abundant evidence that the control does not just prevent critical analyses from being aired, it actively disables and destabilises groups which the network of companies perceives as threats. For example, in the US, an organisation with the Orwellian name of AIM (Accuracy in Media) lists at least eight oil companies amongst its supporters. And since, as Herman and Chomsky (1988) pointed out, it is difficult to do a media job well if you don't believe what you are saying, most investigative journalists take to the uncomplicated solution of deceiving themselves into believing it. "At the very least, we must acknowledge the very simple fact that those problems covered by the mass media are portrayed in such a light as to confuse the public, divert attention from the more fundamental problems and minimise the justified anger of a deceived and contaminated public." (Edwards, 1998:22)