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Teaching for Sustainability: Curriculum Reform in the Age of Environmental Injustice

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Abstract: The present global environmental crisis manifests acts of injustice because the people who contribute most to its causes are not the people who reap most of the resulting harms. The former tend to be well educated and hold positions of power or at least high levels of personal consumption. This points to a failure of education systems and institutions that cannot be ignored in the light of their potential to help and their responsibility to do so. Applying the moral principle of restorative justice to education, we argue in favour of a curriculum that focuses on sustainability as foremost imperative.
We begin our argument by surveying the determinant factors that contribute to the counterproductive behaviour causing the crisis. We then document how education at all levels has contributed to environmental injustice by omission and commission, referring to education in Canada as a case in point. Addressing the failings of education through the lens of restorative justice we arrive at a new transdisciplinary curriculum that focuses on sustainable living and the restoration of damaged systems. We argue that the major obstacles to sustainability are ideological. Therefore our proposed curriculum emphasises values, attitudes and beliefs as a means to counteract counterproductive ideologies and help the learners to actively change their lives.

Keywords: Education for sustainability, curriculum, restorative justice;

Introduction

Every call for justice rests on an argument establishing that injustice has been committed. In this essay we focus specifically on environmental injustice, defined as the absence of environmental justice. The concept of environmental justice has attracted increasing interest during the two decades since Wenz's (1988) seminal work. The complexity of the concept and the variation in definitions stem in part from differences in conceptions of justice (virtue-based, libertarian, efficiency-based, rights-based, and utilitarian) and from differences in the application of justice (distributive, retributive, restorative, procedural, etc.). We agree with many of our colleagues that the most useful theories of environmental justice share a common perspective of ecocentric holism.[1] Its guiding values are ecosystem health (Costanza, 1992; Rapport, 1998) and communitarian welfare (Tam, 1998; Taylor, 1986).

The well-documented manifestations of the current global environmental crisis include increasing rates of resource depletion, continuing out-of-control growth of the global human population, continuing pollution with its consequences on climate, habitat quality and public health. Furthermore, unprecedented rates of species extinctions are caused by the worldwide modification of ecosystems through habitat depletion, modification of landscapes and climate, and through species displacement (McMichael, 2001; UNEP-MAB, 2005). We will show that environmental injustice ranks among the leading causes of the crisis while it also arises continuously as one of its consequences.

In order to make this argument for environmental injustice we shall first examine the anthropogenic causes of the crisis and connect them with particular forms of counterproductive behaviour found among human societies, notably among their most powerful sectors. But rather than laying blame at the doors of the powerful we intend to trace the line of causation back to education and suggest that the ulterior source of environmental injustice lies in a systemic failure of education. While we will draw our examples from Canadian education systems, specifically in British Columbia, our case applies globally. In the second half of our essay we will explore the scope for restorative justice as applied in the form of curriculum reform.

Environmental Injustice: Sources and Manifestations

Overwhelming evidence suggests that the global environmental crisis is anthropogenic. Specifically, it is caused by five causative and self-reinforcing processes; they 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; Wackernagel et al. (2002). Overshoot results if the signals that the system communicates back to a growing population are delayed, distorted, ignored or denied, which in turn causes detrimental behaviour to continue unchecked. Without discussing the evidence any further we will proceed on the assumption that the crisis is primarily caused by the decisions and actions of humans.

A closer look at those anthropogenic causes reveals a quantitative and a qualitative dimension. On the quantitative side, the logistic model of population growth implies that systemic constraints will sooner or later limit the growth of any population, irrespective of individuals minimising their demands on the ecosystem (Ehrlich et al 1995). The qualitative dimension transcends the ecological model by revealing choices for human survival. At stake is not so much the survival of humanity per se but the individual's privilege of choosing among modes of survival (Cohen 1995). Potter (1985:426) distinguished between five kinds of survival: mere, miserable, idealistic, irresponsible, and acceptable. The range of options depends on our numbers but also on the values and priorities that guide our behaviour.

Accepting human behaviour as the primary cause of the crisis raises questions of justice. For example, to what extent do some people in this crisis experience disproportionate harm as a result of the behaviour of others? That would constitute injustice. Secondly, to what extent is the injustice exacerbated by that behaviour being deliberate or negligent rather than inadvertent or unavoidable? We will address the latter question by examining what determines counterproductive human behaviour. Those determinants fall into two broad categories: conceptual blocks, mental habits and motivations defined by ideals, attitudes, values and paradigms on the one hand, and structural relationships inherent in the predominant socio-political and cultural frameworks on the other hand (McMichael 1993; Lautensach 2003). One of the upshots of the longstanding debate on structure versus agency is the realisation that they reinforce each other at many levels. An attempt to demonstrate injustice needs to address ethical determinants of agency and structural determinants of

behaviour, as do efforts to modify human behaviour at a large enough scale. However, in this essay we will focus on agency, for several reasons. First, human agency (decisions, actions, and behaviour) has received less attention in the literature on sustainability[2] than have structural constraints, structural violence and structural injustice. Secondly, among our professional expertise the prime impetus for this essay came from utilitarian and virtue-based ethics focused on agency. Thirdly, we have restricted our search for solutions primarily to the fields of educational practice and curriculum reform, fields that focus on human decision-making and its determinants in the developing individual.

Narrowing our scope of behaviour determinants to those endogenous to the individual, his culture and peer groups, we identify certain conceptual blocks, cognitive dysfunctions and counterproductive mental habits that prevent people from delaying an appropriate response to information about the crisis. This includes, for example, the unwillingness to sacrifice for proactive gains (Caldwell 1999); trust in technological fixes (Ellul 1964); limited capacity for learning and for flexible response (Toffler 1974); culturally sanctioned unsustainable behaviour and counterproductive concepts of progress (Ehrlich et al 1995; Caldwell 1999). Other cognitive dysfunctions, moral ineptitudes and mental habits constitute reasons for denying altogether that reliable information about the crisis exists (Gordon & Suzuki 1990; Hodgkinson & Innes 2000). They include the inability to perceive one's environment in a holistic way (Forrester 1971); the inability to extrapolate to global dimensions (Caldwell 1999) and to the long term (Gordon & Suzuki 1990); wishful thinking, self-deception, weakness of will (Aristotle's 'akrasia') and groundless optimism (Lautensach 2003). These determinants can sometimes lead people into denying moral responsibility even when confronted with blatant evidence of injustice.

Other determinants of counterproductive behaviour take the form of more explicit values, attitudes, ideals, beliefs and paradigms that may have had some value in the past but that have outlived their utility in this crisis situation. Examples include the cornucopian belief in unlimited economic growth (Ehrlich & Holdren 1971) and its importance;[3] scientism and technologism (Berry 2000; Gordon & Suzuki 1990); moral nihilism and materialism (Postman 1997); consumerism (Ekins 1998); freedom from nature and dominion over nature (Catton & Dunlap 1980); confidence in laissez-faire policies (Gray 1998); and the ethics of anthropocentrism (Lautensach 2009). Those behaviour determinants often tend to exert their influence in the form of a counterproductive notion of what constitutes progress (Bowers 1993; Lautensach & Lautensach 2004).

To the extent that those endogenous determinants of behaviour are part and parcel of what passes for 'human nature' all of humanity is responsible for having contributed to the crisis. However, the greatest per capita contributions to the crisis come from individuals and communities with the greatest ecological footprints (Wackernagel et al 2007). This includes citizens from rich countries where increasing individual consumption continues to widen the gap between the world's richest and its poorest. Furthermore, disproportionately greater contributions to the problems come from powerful corporations and governments whose leadership pursue agenda that cause pollution, deprivation, resource depletion and poverty. At the other end of this slanted spectrum of culpability lie the hapless members of future generations who will inherit from us a mess of unprecedented proportions and no recourse. Returning to our two questions probing for injustice we can unequivocally assert that

disproportionate harm exists and that it is caused largely by negligence. Whatever the specific explanations for counterproductive and discriminatory behaviour may be, a considerable measure of injustice seems evident. But the injustice does not end there.

The vast majority of that leadership in industry and government consists of highly educated individuals, i.e. holding at least one university degree. In May 2008 we conducted a survey of the educational qualifications of the key decision-makers in the IMF, the WTO, and other political and commercial organisations, as published on the relevant websites. Our findings, summarised in Table 1, show that the vast majority of those directors whose qualifications are reported hold postgraduate degrees, mostly doctorates in economics. This confirms Rolston's (1996:186) report of an 'inverse proportion' between the number of degrees a person holds and the degree of sustainability achieved by them. We know personally numerous individuals who hold PhDs but are not yet even recycling their household garbage.

Extrapolating from this admittedly small sample we agree with others (Orr 1999; Priesnitz 2000) that the greatest amount of harm in this crisis is done by people with higher degrees. Their actions and decisions tend to contribute to a worsening of the crisis and a deepening of inequities and insecurity. The five self-reinforcing processes driving the crisis that we mentioned above are to a large part propelled by the ill-advised, short-sighted and self-serving decisions of this minority who collectively hold a considerable share of global political power.

By virtue of their educational backgrounds, professional competence and social status those individuals are privy to all the pertinent information regarding the consequences of their decisions. The explanations for their decisions and behaviour may lie within the range of behaviour determinants summarised above, but they can neither claim ignorance nor can they deny moral culpability. It seems that merely being informed about the crisis does not by itself dispose a person toward responsible behaviour. What, then, is primarily driving the decisions and the behaviour of this powerful minority? We propose that the primary drivers are values and attitudes. 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 et al 1994). Also, aims that were converted from instrumental status to the status of end values through the process of goal displacement tend to gain influence on our decisions (Lautensach 2003; Wenz 1988). Those observations, as well as abundant empirical evidence (e.g. Nicholson-Lord 2001) suggest that values, attitudes and beliefs determine human behaviour more strongly than does propositional knowledge (Bowers 1993).

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 (Cosgrove et al 1994). But even those people tend to be citizens of OECD countries, and many of them have received some postsecondary (tertiary) education. An empirical correlation appears evident between higher education and inadequate decision-making. 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).

Table 1. Distribution of highest educational qualifications among the directors and leadership of some major political and the top two media organisations. No information was available about the World Bank directorates. Data on the Bank of Canada cover the period from 1934 to 2008.

Organisation	**Educational Qualifications**				
	PhD	MA or other postgraduate	BA or equivalent	Secondary only	No information
IMF	7	3		2	14
World Bank	1				24
UNESCO		1			
WTO (1999 data)	1	3			
Time Warner	2	1			10
Google		2			
Bank of Canada	4		4		

To summarise so far, our claim of environmental injustice rests on two arguments. First, the responsibility for the global environmental crisis and for all the suffering it brings to the world's destitute is not evenly shared by all of humanity. More of it lies with those individuals who consume more than the global average, and most of it lies with the tiny minority who hold the greatest decision-making power. Our second argument regards the curious correlation between moral culpability and educational status. We conclude that injustice regarding the global environmental crisis manifests itself in two ways: in the disproportionate distribution of benefits, harms and culpability, and in the failure of education systems to address the known determinants of counterproductive behaviour. It is this failure of education that we will focus on in the next section.

The Failure of Education

The evidence that a large number of well-educated people continue to make decisions that are blatantly counterproductive in the present situation indicates that somehow all that education has failed. This failure of higher education manifests itself in two ways. First, 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 & Weingartner 1969). This includes the teaching of a large amount of material that is factually wrong (Orr 1992, 1999) and the reproduction of the counterproductive values, attitudes, beliefs and paradigms mentioned above. Education also evidently fails to effectively counteract

those more subconscious cognitive dysfunctions, mental habits and moral ineptitudes that we identified as contributing to counterproductive behaviour.

The second manifestation of failure lies in the inability of education to widely elicit alternative, more productive learning outcomes, namely basic ecological concepts and the values, beliefs and attitudes that would provide the basis for sustainable living (Postman 1997; Smith & Reynolds 1990; Laney 1990). Summarising a substantial number of published analyses (Lautensach 2003), 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 (Van Matre 1990; Werdell 1974). 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 and observations below).

Accepting the correlation between higher education and bad decisions raises the question of causation. The answer to this question depends on what particular manifestation of the crisis we focus on, 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 the Amazon rainforests? 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 (postsecondary) education to the relevant attitudes and values of those individuals (Raths, Harmin, & Simon 1978). What seems undisputable is that education systems worldwide could perform far better towards preventing and mitigating such manifestations of the crisis, as shown convincingly by Orr (2004).

One might concede that false education contributes to the crisis, and one might even acknowledge the mitigative potential of educational reform, but one could still object to the idea of a moral duty for educators to make such attempts. We believe that such a duty exists for three reasons. The first reason is based on the principles of non-maleficence and beneficence in medical ethics. The principles of medical ethics are 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 reason for a moral duty of educators rests on intergenerational justice which places a moral duty on every individual not to negligently jeopardise the security 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 by contributing to the crisis.

In the Canadian context, concrete documentation on the failure of educational institutions can be found in their mission statements. We examined relevant documents from five Canadian universities (University of British Columbia, University of Toronto, McGill University, Dalhousie University, University of Northern British Columbia), from the BC Ministry of Education's curriculum resources, the British Columbia College of Teachers, as well as the Council of Ministers of Education**,** Canada**.**

We found several distinct approaches to defining one's institutional *raison d'être*:

- Ecocentric motto and goal statements, as well as sweeping recognition of the sustainability imperative, but little follow-up into policy and curriculum
- Vague allegiance to ideals of social justice and to undefined concepts of sustainability and progress
- Emphasis on well-organised continuation of business as usual and traditional obligations without reference to ongoing changes in context
- Emphasis on optimising pedagogical methods and academic skills with vague reference to 'service to society' and no mention of changing global imperatives.
- No overarching institutional mission is given, resulting in parochial fragmentation of ethical priorities along disciplinary boundaries.
- A summary abrogation of all wider ethical considerations outside the interests of the peer group of professionals.
- Acknowledgement of overarching critical challenges but omitting any reference to the global environmental crisis.

Those approaches have in common one of two positions. Some approaches abrogate wider responsibilities to society and the biosphere by emphasising pedagogical, technical, economical, and scientific agenda. This position clearly involves some of the determinants of counterproductive behaviour that we discussed earlier, and it violates professional duty for the reasons stated above. Alternatively, some approaches admit to some kind of public responsibility in vague, superficial statements but without translating those goals into policy. Here the duty exists not only for the two stated reasons but also because the institution explicitly professed to it. Both positions mark a failure to meet the institution's moral obligations. Denying one's responsibility in the face of clear evidence of powerful capability and deep effects of one's actions amounts to a moral cop-out. Admitting responsibility without acting accordingly seems no less objectionable. Either mode of conduct is equivalent to educational malpractice (Foster 1985; Standler 2000).

We have argued that injustice by omission and commission is evident in the way that a relatively affluent minority of humanity contributes disproportionately more to the worsening of the global environmental crisis and receives disproportionately less of the resultant harm. A second manifestation of injustice lies in the failure of education systems, despite adequate funding and information, to counteract those

determinants of behaviour that evidently drive the crisis. This injustice involves again omission and commission, and it is aggravated by the failure by some educational institutions to perform up to their own mission statements and by others denying moral responsibility. How, then, might this injustice best be addressed?

The first manifestation seems quite intransigent to simple policy measures but the second holds more promise; the failure of education can be addressed by educational reform. Regarding the application of justice, the priority seems clear as well. Measures of punitive or retributive justice cannot be brought to bear in the absence of comprehensive changes in legislation, and their deterrent power seems questionable. Considerations of distributive and procedural justice can inform us which norms are to be applied henceforth but they do not address damage done in the past. In contrast to all those, restorative justice with its focus on compensation for past harm opens the scope for retroactive as well as proactive countermeasures. We therefore suggest that the restorative perspective is best suited for devising appropriate educational reforms.

Restorative Justice in the Shape of Educational Reform

Before we discuss educational reform we wish to explicate our reasons for doing so. Among the many opportunities to apply restorative justice to address the harm caused by the crisis, we focus on the educational sector for three reasons. As we established in the preceding section, it carries a good deal of culpability by failing to teach the right outcomes, by teaching the wrong outcomes, and by failing to deliver according to its aims. We also established that the most important educational outcomes in this context are affective ones[4], including values, attitudes, ideals and unexamined beliefs, because they strongly determine human behaviour. Our values, attitudes and beliefs are formed largely 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 portion of which takes place in the course of formal education (Bowers 1993; Postman 1997).

A second reason why we focus on formal education as a value-determining process is that it is subject to public scrutiny and political control, and can be deliberately modified through policy reform. Obviously, important values are also acquired prior to and outside of formal education through the media, the entertainment industry and general cultural influences. 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.

Thirdly, formal education in values, attitudes and beliefs has a considerable potential to make a valuable contribution. The pursuit of affective objectives has been traditionally neglected in

favour of cognitive and psychomotor objectives. They are underrepresented in most curriculum documents and in curriculum planning and they are largely ignored in the assessment of the learner (Postman 1997). On the other hand, the transmission of values during education is inevitable. It proceeds through implicit value judgements and value priorities contained in the stated aims - the so-called 'hidden curriculum' (Contenta 1993). Another contribution comes from value-related issues that are being deliberately avoided and that carry a negative significance (the 'null curriculum'). By relegating the transmission of affective outcomes to the realms of the implicit, the unplanned, and the unconsidered, educators forego an opportunity (and renege on their professional obligation) to help the learners to acquire those values and attitudes that are most likely to benefit them in their future lives (Bowers 1993).

The fact that the acquisition of values in formal education is both highly significant and inevitable suggests that the much-touted ideal of a 'value-neutral' curriculum is not only undesirable but also impossible to achieve (Rich 1968; Bernstein 1971; Madsden 1996). While the acquisition of specific attitudes and values by the learner as a result of deliberate teaching efforts is not without practical difficulties, a curriculum that takes into account affective outcomes is bound to enjoy greater success with the learner, if only because it communicates more sincerity. Also, affective outcomes can be effectively pursued through a considerable range of teaching methodologies (Caduto 1983). It is this prospect of greater overall success in learning outcomes that imparts on this project an extra significance beyond affective education, namely as an instrument of restorative justice.

We shall now present a summary overview of a plan for curriculum reform designed to address the problems we laid out. A more detailed account with a more pedagogical focus has been presented elsewhere (Lautensach & Lautensach 2010). One overarching goal of the proposed curriculum is to lay the moral groundwork for a globally sustainable society. Tam (1998: 58-59) eloquently pointed to the social justice dimension of this goal: "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". Elsewhere (Lautensach & Lautensach 2004) we argued that a transition towards sustainable living can be managed under the ideals of efficiency, restraint, adaptation and structural reform. In behavioural terms, those ideals define the perspective of the proposed curriculum. A second overarching goal is to create motivation in the individual towards paying restitution to ecosystems, threatened species and environmentally disenfranchised communities in compensation for past wrongdoings. This goal is informed by the realisation that at this advanced stage of the crisis, aiming merely for sustainability will no longer suffice. Instead, the curriculum aims at a reformulation of what constitutes progress, which accords with the opinions of many environmental educators (Nicholson-Lord 2001), and it resonates with the goal and vision in the United Nations' plan for a Decade of Education for Sustainable Development (2005-2014). [5]

In order to pursue those goals effectively, the reform of education has to address the causes for its current failure as outlined above. This means for educational institutions to stop teaching counterproductive beliefs and values, and to teach appropriate concepts and values

more effectively. A third agendum arises out of considerations of tactical expediency and distributive justice, namely to implement a pedagogy of liberation.

In order to stop teaching counterproductive beliefs and values, an educational program in pursuit of the goals of sustainability will need to effectively counteract the dominant concept of progress (Fien 1993; Lautensach & Lautensach 2004). This will require that it interfere with certain systemic mechanisms of ideological reproduction. This can be accomplished in two ways. Firstly, educational reform must counteract the hegemonic influence of ideologies that serve to perpetuate the dominant concept of progress. They include many of the determinants of counterproductive behaviour that we discussed above. Secondly, the perpetuation of anthropocentric values needs to be prevented. This argument is presented in more detail elsewhere (Lautensach 2009). The required shift towards more ecocentric ethics relies on to a large extent value education. It amounts to a moral paradigm shift that extends beyond environmental values into how we conceptualise the moral position of humanity in the world.

To teach appropriate concepts and values more effectively requires foremost a clear strategy and a determined effort to re-prioritise learning outcomes. They need to favour an environmental ethic that is consistently ecocentric, as well as beliefs and attitudes of the new ecological paradigm (Fien 1993) which is to replace the dominant social paradigm. They include dependence on nature, integration within the natural environment, recognition of natural limits to consumption and to technological development, concern for future generations and respect for nature (Taylor 1986). Specific cognitive skills and reflective attitudes are to address the counterproductive mental habits we discussed above (de Silva 1997). The cognitive domain should also include a transdisciplinary emphasis on ecological principles, on the crisis itself (Madsden 1996) and on current trends and probable future scenarios (Delcourt & Delcourt 2000; Perelman 1976). Learners need to become competent in finding new solutions 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.

Unlike the more passive transition to post-industrial society, achieving a sustainable society requires a transformative effort (Perelman 1976: 196). Social transformation will require 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. The proposed pedagogy of liberation is designed specifically to help empower and motivate the learner towards taking action. Unless the learner is prepared to think and act for him/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. Without that liberation, exploitative dependencies acting from within the learner and structural constraints acting from without would continue to hinder any deliberate change to more sustainable living. Those dependencies 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 unless they free themselves of at least some of those conceptual constraints and replace them with more helpful

relationships (Ekins 1998). Without receiving some directed help through education, the learner may not be able to accomplish that.

Liberation pedagogy also addresses those existing power imbalances that are ill-suited to mitigate the situation and that often 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 we propose are designed to liberate the learner from the influences of the dominant paradigms and from structures that perpetuate those internal dependencies and external constraints.

The purpose 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 our 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).[6] 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 & Gintis 1976; Lautensach 2003). Counter-hegemonic education aims to accomplish the opposite, to relieve the learner from this habituation to oppression.

Recognising the oppressive situation that envelops most global citizens brings us back to our argument in favour of restorative justice. In fact, it appears to us that this oppressive situation represents an even greater injustice than either the unequal distribution of harm and culpability in the crisis or the effective failure of entire education systems. And again the restorative approach seems the most reasonable recourse because it places the onus to make amends on all of humanity according to their individual culpability and their capacity to contribute towards solutions.

How can education be expected to bring about this liberation? 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 relevant 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 her newfound views. The empowerment of the learner represents an important aim of educational reform towards sustainability. Empowerment is one of six general aims in the proposed curriculum as summarised in the next paragraph; 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 her own values and beliefs, and to take action.

The curriculum that we propose is organised into six general aims, each encompassing distinct groups of learning outcomes; they are described in more detail elsewhere (Lautensach & Lautensach 2010). The aims 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 abovementioned agenda of counteracting undesirable educational outcomes, encouraging such outcomes as are conducive to the general aims, and empowering the learner to take action. Besides the three agenda, other features common to 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. Detailed descriptions and explanations of those general aims, their respective learning outcomes and suitable teaching methodology were published elsewhere (Lautensach & Lautensach 2010).

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. Our proposed pedagogy seeks to develop a critical consciousness that will put into question the 'business as usual' 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, as well as the uncritical reproduction of that straightjacket by the education sector itself. This is likely to attract political countermeasures similar to the greenwash and brownlash tactics encountered by the environmental movement (Beder 1997; Edwards 1998 1999; Suzuki & Dressel 2002). The ability of the learner to recognise and accurately assess such tactics, to interpret media reports correctly, and to attempt her own, deeper analysis, relying on cognitive skills and affective dispositions represents an important component in her empowerment.

Conclusions

As with most calls for curriculum reform, ours arose from an impression of inadequacy in educational practice and learning achievement. However, these educational concerns pale in comparison to the pressing need for restorative justice in the context of the greatest challenge humanity has ever faced. The global environmental crisis represents both a scourge and an opportunity. It has been allowed to gain momentum because our behaviour is still largely determined by factors that have remained unaddressed. Those factors include negligent or irresponsible decision-making, inadequate education and oppressive power relationships worldwide. What connects those causes is the common element of injustice in its structural and agency-related dimensions. Accordingly, in our plan to address those problems we take the approach of restorative justice. The restorative element provides the indispensable benefits of relieving ecological insecurity and addressing recurrent problems by empowering our graduates to question their primary causes – the effects of economic growth, population growth, technological expansion, arms races, and growing income inequality on the crisis – and to act on their newfound insights.

Our proposed pedagogy for sustainability contains several major themes. Firstly, it takes a holistic approach across all the dimensions of human development: the intellectual, emotional, spiritual, moral and physical. It 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 we believe that only a global vision can inform appropriate local measures. The overarching aim of this program of educational reform is to facilitate a sustainable existence of acceptable quality for the species *Homo sapiens* on the planet Earth and to balance that priority against its impact on non-human nature. 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, making the pedagogy applicable in variable ways to Canadians.

Secondly, this pedagogy clearly emphasises values, as seems appropriate for a plan based on considerations of justice. Many analyses of the crisis and its causation (reviewed in Lautensach 2003) indicated that without a change in prevailing values the crisis could not be effectively addressed. We also argued (Lautensach 2003) 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 & Bennett 1994; Toffler 1974; Bosselmann 1995). In many respects, affective learning outcomes can be considered the most important results of the educational process because they render other outcomes more achievable (Caduto 1983; Raths et al. (1978). Nevertheless they have largely remained implicit or neglected altogether in Canadian curricula – the BC Ministry of Education's integrated resource packages are a case in point - and elsewhere.

A third recurrent theme in this pedagogy is its critical orientation with respect to dominant ideologies. The current widespread emphasis in postsecondary education on discipline

mastery has served to reinforce the dominant ideologies of progress and anthropocentrism through habituation via the hidden curriculum. The curriculum we advocate 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.

The emphasis on the need for action represents another major theme in our pedagogy for sustainability. Taking the step towards action requires that the learner feels confident, safe and competent to do so. This feeling is predicated on a certain degree of liberation from dependencies of habit, ideology, institutional context and the associated injustice. 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 of promoting justice, our proposed pedagogy calls for certain strategies and methods adopted from Freirian liberation pedagogy. Critical pedagogy contributes a significant body of theory on the empowerment of the learner; and it provides a modicum of counterbalance to the influence of technocratic educators who have dominated the professional development and training especially of new teachers (Pike & Selby 1988; Bowers 1993). It is to be hoped that in combination with its other elements our proposed pedagogy will allow our learners to build on those contributions and actively address the global environmental crisis through the lens of restorative justice.

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[1] In 1997 an international conference on environmental justice was held at the University of Melbourne that included among its aims to formulate "global ethics for the twenty-first century". A considerable fraction of the participants seemed to interpret environmental justice in a distinctly non-anthropocentric sense where the concept was extended to non-human species and to ecosystems. The extension of the justice principle to populations of non-humans follows four incommensurable key concepts: vulnerability of a population, its habitat dependence, degree of sentience, and the extent of anthropogenic damage (Armstrong, 1997).

[2] We use the term sustainability as defined by Lemons (1996), "the continued satisfaction of basic human physical needs, such as food, water, shelter, and of higher-level social and cultural needs, such as security, freedom, education, employment, and recreation", along with "continued productivity and functioning of ecosystems" (p. (198). We regard the popular 'Brundtland' definition of sustainability (WCED, 1987) to be quite useless because of its lack of conciseness, inattention to metaethical considerations and its neglect of fundamental ecological limitations.

[3] The origins of cornucopianism lie in imperial China and mercantilist Europe, even though it widely succeeded only after the Great Depression of the 1930s (McNeil, 2000). Apparently the cornucopian delusion dates back to the physiocrat school of economics which emerged in the 18th century before the laws of thermodynamics were discovered (Schumpeter, 1954). This does of course not excuse the fact that during the past two centuries mainstream economists have found no reason to update their dogma. Small wonder that Lutzenberger (1996) was moved to call classical economics "the dimwitted science", Wackernagel and Rees (1996:41) refer to cornucopianism as "flat-earth economics" and Hazel Henderson (1999) called it "a kind of brain damage". Herman Daly (1993) has termed sustainable growth an "impossibility theorem".

[4] In the widely used taxonomy of educational objectives by Benjamin Bloom educational outcomes are classified into cognitive, affective and psychomotor domains. (Bloom, 1956; Anderson et al, 2001)

[5] The decade of 2005-2014 has been designated the United Nations Decade of Education for Sustainable Development. Its overall goal is to 'integrate the values inherent in sustainable development into all aspects of learning to encourage changes in behaviour that allow for a more sustainable and just society for all.' Its basic vision is 'a world where everyone has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation'. See http://www.phase2.org/undesd.cfm

[6] 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.