An Eco-centred Alternative to 'Business as usual' in Teaching and Learning in (South) Africa

Bert Olivier
University of the Free State, RSA
OlivierG1@ufs.ac.za

ABSTRACT
The present paper is an exploration of a wholly alternative approach to education in South Africa, and argues that, contrary to present educational practices globally, teaching and learning – in fact, all aspects of education, including curricula – should be reframed in light of the imminent ecological crisis facing all living beings in the world. Foremost among these is humanity, given its exceptional position among living beings as the ones implicated in the crisis in both a negative and a positive sense: in the age of the Anthropocene, we are causally implicated, but also potentially as the species which, alone among all living creatures, is capable of ameliorating, if not resolving the crisis. The work of Emmanuel Wallerstein, as well as Joel Kovel, James Lovelock, Naomi Klein, John Bellamy Foster, Claire Colebrook, Zakes Mda and Bernard Stiegler is enlisted in articulating the argument, and the art of cinema is employed to illustrate what different, countervailing attitudes are possible regarding the value humans attribute to the earth, in the face of the very real possibility that our home planet may become virtually uninhabitable for extant living creatures, although other, newly adapted species will be spawned by a hotter planet.

Key words: alternative pedagogy, capitalism, climate change, Earth, ecology, extinction, global warming, technology

> Planet Earth, creation, the world in which civilisation developed, the world with climate patterns that we know and stable shorelines, is in imminent peril. The urgency of the situation crystallised only in the past few years. We now have clear evidence of the crisis … the startling conclusion is that continued exploitation of all fossil fuels on Earth threatens not only the other millions of species on the planet but also the survival of humanity itself — and the timetable is shorter than we thought. (James Hansen, leading climatologist, in *Storms of My Grandchildren*, quoted in Foster et al., 2010, pp. 11-12).

INTRODUCTION

In the 1990s I read a book by Immanuel Wallerstein, entitled *Open the Social Sciences* (1996), which was the Report of the Gulbenkian Commission on the Restructuring of the Social Sciences, headed by himself. I recall that, having argued in favour of such restructuring, he expressed optimism that in countries, including those in Africa and South America, which are less bound by the tradition of separating the humanities, the natural and the social sciences, conditions existed that are favourable for these changes. He wrote that in Africa "a process of experimentation has already begun" (1996, p. 101), and pointed to alternative spaces that have been created by the "emergence of independent research institutions in Africa and Latin America" (1996, p. 102). Elsewhere (Wallerstein 1996a, p. 7) he wrote about the need to "create new mixes" among disciplines, and how to do it, the point being that torpid scientific divisions (which have always had contingent grounds) do not keep track with what is happening in the world, and these "mixes" might expedite the gestation and formation of new disciplines that are engendered by the needs of the time. Not only do I endorse Wallerstein's sentiments, but believe that the time in which we live cries out for a new disciplinary matrix, as it were, which would provide direction and orientation for existing disciplines, and possibly spawn new ones.

What disciplinary matrix would that be, one might inquire. Succinctly put, it would be a multi-disciplinary matrix comprising all those disciplines that contribute to knowledge about the looming ecological catastrophe, beginning with the study of ecosystems (social and natural) and including all those that throw light on its causes, including complexity studies and philosophy, as well as ways to approach it in an informed and emancipatory manner. The latter would include a *revolutionary* teaching and learning that does not shy away from the existentially indispensable imperative, to face the possibility of the extinction of the human race, combined with explorations of ways to preclude this abysmal prospect. And it is my contention that (South) Africa is positioned to contribute to this revolutionary approach to education, given the fact that historically, Africa has had more than its fair share of suffering, and the memory of this should motivate Africans to take the lead regarding the possible amelioration of the greatest crisis that has faced humanity in its existence of almost two hundred millennia. Joel Kovel (2007, p. 22) puts it as follows:

The unhappy nations of Africa, upon whom so many disasters have rained down in the past several centuries, were not always that way. When Europe first found them and began its invasions, African peoples were needless to say not trouble-free, simply because it is impossible for human beings to be so. But they had dignity and social cohesion, and many observers placed them on a developmental par with the Northerners. How they fell so far is not for us to detail here. But whatever its intricacies, their descent obeyed the great law of ecological transformation, that societies, which live in interaction with nature, can disintegrate when the fabric of their existence is disturbed – in Africa's case, chiefly by the inroads of empire, the slave trade, and so on.

Today Africa is facing such 'disintegration' again – not alone, to be sure, but along with the rest of the world – caused by the systemic unravelling of both natural and social ecosystems. Such unravelling is anthropogenic, that is, it has been caused by human economic activities since the industrial revolution of the 18th and 19th centuries, the latest incarnation of which is neoliberal capitalism (the subject of Kovel's uncompromising book). Kovel puts the crisis in perspective where he writes (2007, p. 23):

Viewed from nature's end of things, this crisis appears as an incapacity to mend itself, or as we can say, to buffer the ecosystemic breakdown brought about by its human child. Put more formally, the current stage of history can be characterised as *structured by forces that systematically degrade and finally exceed the buffering capacity of nature with respect to human production, thereby setting into motion an unpredictable yet interacting and expanding set of ecosystemic breakdowns.* The ecological crisis is what is meant by this phase. In it we observe the desynchronisation of life-cycles and the disjointing of species and individuals, resulting in the fragmentation of ecosystems human as well as non-human, along with vast changes in species composition, as well as the more formal environmental aspect of things. Humanity is not just the perpetrator of the crisis; it is its victim as well. And among the signs of our victimisation is the incapacity to contend with the crisis, or even to become conscious of it.

The present article is motivated by what Kovel writes in the last sentence of the above excerpt, because the "incapacity to contend with the crisis" is intimately connected with the incapacity "even to become conscious of it". In this respect, teaching and learning could – in fact, *must*

– play a decisive role. The world is today witnessing the proverbial phenomenon of 'Nero fiddling while Rome is burning' on a planetary scale: while people are fretting over their Facebook or WhatsApp 'status', and avidly 'following' their favourite celebrities on Twitter, the life-blood of the planet's ecosphere is draining away, slowly but surely. Does this not warrant a fundamental restructuring of education? Should *all* educational systems and practices, including teaching and learning, not be recalibrated to awaken people – in this case young people, the ones who stand to suffer most as the climate becomes increasingly volatile and intractable – to the need to do whatever is humanly possible to ameliorate the impact of extreme climate change on them and their children (if they have any; no one could be blamed today for not wanting to have children)?

Evidence of and for the ecological crisis is so widespread and readily available (see Kovel 2007; Klein, 2014; Foster *et al.* 2010, among many other sources) that it is hardly necessary to adduce it yet again in this context. Suffice it to say that if the Intergovernmental Panel on Climate Change's assessment report (2014) can make the following unambiguous statement, things are far worse than one can imagine, because natural scientists work with criteria of probability, applicable to the empirical, experiential world (2014 p. 37):

One of the central messages from Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC) is that the consequences of unchecked climate change for humans and natural ecosystems are already apparent and increasing. The most vulnerable systems are already experiencing adverse effects. Past GHG emissions have already put the planet on a track for substantial further changes in climate, and while there are many uncertainties in factors such as the sensitivity of the climate system, many scenarios lead to substantial climate impacts, including direct harms to human and ecological wellbeing that exceed the ability of those systems to adapt fully.

In brief, as they say in the movies: 'Be afraid, be very afraid!' But not so afraid that one goes into a state of paralysis; on the contrary, the time for action is *now*, and it would be advantageous to involve young people, through teaching and learning, in the process of alerting them to the unfolding crisis. Here is just a brief glimpse into the reasons for urgent teaching and learning initiatives in the face of the looming crisis (Sachs, 2018)

The oil companies have known for decades that their product is dangerous for the planet, but they relentlessly hid the evidence, stoking confusion rather than solutions. Through individual company efforts to support climate denialism and confusion, and through relentless and reckless lobbying by the US Chamber of Commerce and the American Petroleum Institute, the companies launched a full-blown assault on climate science to stop or delay the shift to renewable energy.

The result of continued reliance on fossil fuels has already been a massive increase in the severity of storms worldwide, of which Hurricane Katrina in the United States stands as a terrifying example (Klein, 2007, pp. 3-7). There is no certainty on how long it would take on the part of humans right now for concerted action to reverse the effects of climate change, but the sooner humanity acts in concert to change their way of living – and this is where education is indispensable – the better. Why put this argument forward in a journal focusing on African perspectives on teaching and learning? As the cinematic work of Jacquet, and of Perrin and Cluzaud (discussed below) demonstrates, the only places in the world today where films can be made on life in rain forests are South America and Africa, where industrialisation has already damaged forests severely, but where there are sufficient forested areas left to evoke the beauty, the mystery and the ecological indispensability of these vast ecosystems, or 'lungs of the planet'. Besides, humanity in the guise of *Homo* and *Gyna sapiens* originated in Africa (Shlain, 2003), from where members of the species spread across the globe in all directions. Is it not appropriate for the much-needed revolution in teaching and learning – from within the matrix field of ecological studies and education – to emanate from Africa, too?

MODE OF DELIVERY

The mode of delivery of the material which is required to bring about a veritable revolution in (critical) thinking and action on the part of students at university level – which need not be restricted to them, however, but could be adapted to high school and even primary school students – can be diverse. Moreover, because I am proposing that everything that is taught at university (and at school, ultimately) be related to, or framed in terms of, the overriding 'truth', that life on Earth can only survive on condition that humans change their way of living fundamentally. It therefore pertains to both what is taught and how it is taught (and learned).

On the one hand, because we live predominantly in a visually oriented society, visual media should be pre-eminently used to 'grab' students' attention; however, this does not mean that written texts should be avoided. On the contrary, once students' attention and interest have been secured, written texts should be introduced to problematise the visual material they have been exposed to, as will be argued below. There are eminently suitable ecologically relevant films and television series available to show to, and critically discuss with students, best known among which is the BBC-film work of David Attenborough, such as his cinematic eulogy to life on Earth, entitled *Planet Earth* (2006) and its sequel, *Planet Earth II* (2016), as well as the captivating French film on the life (and death) of forests, *Once upon a Forest* (Jacquet, 2013). In the same category as the latter there are the films by Perrin and Cluzaud, namely, *Océans* (2009) and *Saisons* (2015), which share with Jacquet's cinematic work the crucial attribute (unlike Attenborough's work, important as it may be) of not being human-centred, but nature-centred insofar as one is enabled to perceive forests and oceans through the roving eye of the cine-camera (sometimes by means of it being fastened to drones), the way that animals and birds would see it. The significance of this lies in the all-important 'posthumanist' principle, that humans are not the be-all and the end-all in terms of eco-importance on this planet; other species are just as important and, furthermore, the current rate of species-extinction is deleterious for ecosystems to the point that a tipping point may be reached where too many interdependent species may go extinct for the 'food-chain' to remain intact. And the capacity of images to mediate what may otherwise be a completely unfamiliar realm to most students who grow up in urban environments, should not be underestimated (see Olivier 2010a and 2010b).

More mainstream-oriented cinema should not be avoided altogether, though; there are examples of films with a powerful ecological – in fact, eco-political – orientation, such as Hillcoat's *The Road* (2009), with its uncompromising depiction of an abject world become virtually uninhabitable after some kind of eco-disaster, and Cameron's vastly underestimated *Avatar* (2009), which challenges people to overcome their 'paralysis' – as represented by the protagonist in the film, the disabled Jake – and galvanise themselves into eco-political engagement to rescue the earth, represented by the moon, Pandora, in the

film (for a discussion of this, see Olivier 2010 and 2011). To these one might add Cuarón's *Gravity* (2013) and Nolan's *Interstellar* (2014), which are discussed below as instances of either affirming the indispensable value of the earth, or denying it – both of which have undeniable implications for the stance one takes towards ecological values.

Regarding the importance of supplementing visual material with critical discussions, the significance of *reading* accessible texts cannot be over-emphasised. These would include (minimally, excerpts from) texts like James Lovelock's *The Vanishing Face of Gaia – A Final Warning* (2010) and Naomi Klein's *This Changes Everything – Capitalism vs The Climate* (2014) and conducting or directing critical *discussion* of these by students (in the form of questions and answers, for example). Furthermore, there are by now many instances of eco-critical literature available for inclusion in school literature curricula for critical discussion, as will be shown below under 'sources of learning' with reference to the work of Zakes Mda. This is essential in an age when people read less and less. Yet, reading – and being taught how to read critically – is indispensable, because reading forces the reader to be reflective when she or he comes across words or phrases they do not readily understand. Moreover, it creates the opportunity for learning, when these words and phrases are explained in the context of the overall direction of the text at the unfolding 'syntagmatic' level. One might say that, given the structure of a written text at the 'syntagmatic' (what follows what) and 'paradigmatic' (what belongs together by association) levels, it has a very different effect on the reader's consciousness than a visual medium like film, where the forward movement of the narrative or image-sequences does not leave time for reflection, which usually only occurs afterwards. (This is discussed at length in Olivier 2010b.) Needless to add, reading such texts should not only occur in the context of critical discussion; writing critical responses is equally important, even if this consists in one-page responses to critical questions posed by lecturers.

The third component of teaching critical eco-awareness involves field trips into wilderness areas, wherever this is possible. Witnessing crucial visual evidence of ecological integrity, or its opposite, eco-degradation, through film or television, is not the same as experiencing nature 'directly', albeit always being mediated by cultural notions of what it entails. I recall taking various groups of

students to wilderness areas near Port Elizabeth, and many of them remarking on how relaxed they felt during, and after, spending a weekend in mountains or forests. My explanation was always to remind them of what evolutionary psychology teaches one, namely, that when we enter wilderness areas and sojourn there for a while, we feel relaxed because our bodies tell us that we have 'come home': our species' distinctive genome was shaped in the course of the millions of years that our immediate hominid ancestors, *Homo habilis* and *Homo erectus*, as well as our own species, *Homo* and *Gyna sapiens*, lived nomadic lives as hunter-gatherers in close proximity to nature (Shlain 2003). Small wonder that big cities are often experienced as alienating. Hence, although the necessary safety precautions always have to be observed – as a member of the Mountain Club of South Africa I am only too aware of this – embarking on wilderness experiences with manageable groups of students is an almost indispensable component of raising their ecological awareness. Witnessing the flow of rivers and mountain streams (and swimming in these, if possible), sleeping in caves or in tents in the open, becoming aware of the life-rhythms of animals and birds in forests – all these things are essential to inculcating in students a (perhaps dormant, but always latent) awareness of the irreplaceable, intrinsic value of Mother Nature – appropriately so called, because 'she' is the sphere of provenance of all living beings, including ourselves.

SOURCES OF LEARNING: LOVELOCK

The most valuable insight to be gained from the work of James Lovelock, probably the best-known climatologist in the world, and the person who formulated the so-called Gaia hypothesis (now a fully-fledged theory, having been independently confirmed by several other scientists), is that *everything that humans do in the world has an impact on the planet*, or Gaia, because of the complexity of all the interrelated eco-networks that, together, comprise the earth's encompassing planetary eco-system. This is because, as Gaia theory states, the earth is not just a neutral space, or object on which multiple organisms live; on the contrary, the earth itself can be considered a living macro-organism in the sense that, as a self-regulating entity, it (that is, its ecosphere) responds to changes in the relations among other organisms, as well as to changes in the composition of the inorganic elements comprising the medium or mediums in which organisms live, for example, air and water (Lovelock, 2010, pp. 1-8; 105-122).

This insight explains the advent of the Anthropocene, or the geological period so named because, for the first time in geological history, humans have affected the very climate because of their eco-destructive economic activities (such as chemical emissions from factory manufacturing), starting in the industrial age of the 18th-19th centuries and building up to where we are now, with millions of cars spewing carbon monoxide into the atmosphere, day and night. From this it follows that what people do in Africa also affects the ecosystem as a whole, for better or for worse.

But if human activity influences Gaia, and Gaia is a macro-organism comprising the sum-total of constantly changing relations among organisms and inorganic elements, it follows that such activity will also affect other organisms, mostly adversely, as far as climate change is concerned. In fact, anthropogenic climate change, as well as other changes in nature because of human activities – such as the massive amounts of plastic dumped in the oceans (see World Animal Protection's website) – are in the process of causing mass extinctions among animals and insects. Humans are directly responsible for the vast majority of these extinctions today (Foster, 2010, pp. 13-15), and if they accept their responsibility, the very least they can do is to take action that will minimise the effects of climate change and other effects of their economic activities. This action should start at the level of teaching and learning, so that students can become aware, from an early age, of the interconnected nature of ecosystems (Kovel 2007: 95-105) and the negative as well as restorative effects of actions people (may) perform. Africa's 'carbon footprint' is not as large as that of countries in the Northern hemisphere, although that of South Africa is alarmingly large (according to The Carbon Report we rank 16th in the world in terms of carbon emissions, largely because of our use of coal) – all the more reason for introducing an eco-centred foundation into teaching and learning. Only unthinking people would fail to realise that, unless the future is secured by restoring eco-equilibrium in the world, the teaching and learning of *all* other disciplines would be futile.

SOURCES OF LEARNING: KLEIN

The name of Naomi Klein – probably the most indefatigable, ecological (and anti-capitalist), investigative activist-journalist in the world – is known to most media-informed people on either side of the spectrum, from people very concerned about climate change/global warming and other kinds of despoliation of the natural environment to the so-called eco-denialists

(like Donald Trump), who, for various reasons, deny that an ecological crisis exists at all. Having exposed the latest strategy of capitalist profiteering in *The Shock Doctrine* (2007), she turned her attention to the ecological crisis in *This Changes Everything* (2014), with the explicitly provocative subtitle, *Capitalism vs the Climate*. Here (2014, pp. 27-55) she uncovers the cynicism on the part of the most powerful defenders of the economic *status quo* – in the face of overwhelming evidence that climate change is anthropogenic – coupled with unscrupulous bribery of so-called 'scientists', with a view to placing articles in scientific journals and the press generally, to the effect that climate change is not occurring because of human economic activities. The result, she shows, has been a drastic reduction in the public's belief that there is an eco-crisis. The value of Klein's work lies in her journalistic perseverance to uncover evidence, wherever it is available (even entering the beast's den, as it were), combined with her determination to communicate it undiluted to the public through her writing (books, articles and her website) as well as the audio-visual productions in which she has been involved. However, there is another aspect of her activism that makes Klein's work irresistible to anyone with a sense of social and eco-justice: in all her work her fearless moral integrity and social conscience shines through, with the result that, predictably, she has many enemies and detractors. This alone confirms that her work has hit a sensitive spot in the armour of the colossus known as neoliberal capitalism, which is, by all accounts, the driving force behind the ecological crisis, for an obvious reason: there *cannot* be indefinite economic growth or expansion in a finite planetary eco-system.

Despite the mass of alarming indications that emerge from Klein's work about the odds being stacked against climate warriors, she does adduce some hints that the tide might turn sometime in the near future, such as the incipient signs of (what may, and should become) a global mass-democratic movement. What has become known as 'Blockadia', for instance (2014, pp. 253-263), is an unmistakable manifestation of democratic mobilisation – worldwide grass-roots' resistance against attempts by governments and corporations to forge ahead with ecologically damaging projects, such as 'extreme' shale gas or oil extraction near communities who would reap the negative effects of such operations, or promoting chemical fertilisers that cause soils to die (for examples of what protesters are up against,

see Shiva, 1993; and Olivier, 2016). In Africa, such instances of democratic resistance to ecologically damaging activities must function as a wake-up call for many who are always ready (and for good reason) to protest against failures in service-delivery by governments and municipalities, but often conspicuously tardy when it comes to practices that are damaging to the natural ecosystem. Here, too, teaching and learning at school and university should lead the way by introducing students to the implications of living in a so-called democracy, particularly as far as their (and their descendants') *ecological* rights are concerned. One of the ways of operationalising the alternative pedagogical approach promoted here – a very unconventional one, to be sure – would be to introduce the topic of 'activism' into curricula, modelled, perhaps, on Klein's (2014, pp. 253-263) reference to 'Blockadia', as well as on an acquaintance with the idea of 'civil disobedience' as it was formulated by the famous American thinker, Ralph Waldo Emerson, in terms of nonconformity and self-reliance (1841; see also Olivier, 2015).

What do these entail? Firstly, they implicate collective ethical principles as far as human and other species' dependence on natural ecosystem-integrity is concerned. It is inescapable for humans to take responsibility, in the final analysis, for the ongoing devastation of nature today – as far as we know; we are the only ethically culpable species on Earth. Just to mention one (very important) issue, the rate at which rainforests are being destroyed for economic gain simply ignores the fact that these forests are the 'lungs' of the planet, and no financial profit could ever replace their indispensable oxygen-producing function for the survival of all terrestrial life-forms. Would not it be the greatest irony if the very (human) beings capable of taking responsibility for nature, as its guardians, turned out to be its (and their own) destroyers? And does this not point to the greatest ethical priority of all for educators regarding teaching and learning – a truly holistic ecological one, particularly on a continent where such rainforests still exist?

SOURCES OF LEARNING: COLEBROOK

Claire Colebrook's work is essential to help students understand the magnitude of the ecological crisis. She does not shy away from the possibility – never encountered in mainstream media – that humanity is facing the possibility of its own, and other species', extinction. Colebrook draws attention to a seldom-

noticed aspect of this, namely 'self-extinction'. This is one of three kinds of extinction that Colebrook (2014, p. 9) distinguishes: the "sixth great extinction event" pertaining to all living species, "extinction by humans of other species" and "self-extinction, or the capacity for us to destroy what makes us human". The latter comprises the kernel of the crisis, insofar as it may be understood, in principle, as what has historically conditioned the other types of extinction. Colebrook elaborates (2014, pp. 11-12):

> There is a widespread lament regarding a trajectory of self-extinction occurring in the human brain. According to Susan Greenfield, in her book ID, we are losing identity: where our brains once operated by a synthesising power of grammar, syntax and critique we are now seduced by a culture of stimulus... We are not just losing one of our critical powers — our power to represent or synthesize what is not ourselves — we are losing our very selfhood. For 'we' are — as human, as identities— just this evolved synthesising power.

Colebrook points out that the concept of 'climate' has played an important role in relation to extinction, reminding one that, like extinction, it, too, is a complex notion. On the one hand it denotes the "standard meteorological notion of climate" (p. 10), but on the other, also entails a combination of temporal and spatial implications, insofar as it is inclusive of that which "binds us to this time on the earth, with its own depletions and limits", as well as the spatial "surface or terrain" on which we live (p. 10). Furthermore, it is only in relation to the context of 'climate' that the geological epoch of the 'Anthropocene' attains meaning, as the era when humankind's power to alter it has left its destructive imprint on the earth, to the point where, as Colebrook remarks, it will be perceptible in geological strata in the future to any intelligent beings who might examine these.

Ironically, the widely publicised effect of human activities on terrestrial climate systems has *not* had any significant effect on governmental or collective public action aimed at arresting the process in the interest of human and other species' survival. On the contrary; as Colebrook points out (2014, p. 11):

> recently, climate change scientists have started to play with new strategies for awakening public affect: perhaps the focus on hope needs to give way to mobilisations of fear, whereby we learn to 'hug the monster,' in order to shift from inertia and quiescence to action. How is it that the human species, seemingly so hungry for

life and dominance, has conveniently forgotten its own self-extinguishing tendencies?

What is arguably the chief reason for public apathy has already been alluded to above, where Colebrook refers to Greenfield's observation, that the human brain, "once operated by a synthesising power of grammar, syntax and critique" is "now seduced by a culture of stimulus...", which marks a loss of "one of our critical powers" as well as our "very selfhood". This is a stark reminder of what has been happening to our species during the last five decades or so: ever since the advent of television, many studies have confirmed the phenomenon of the increasing, systematic depletion of the human capacity for sustained (intellectual, mental) attention for an appreciable time. Why? Because contemporary society is predominantly visually oriented, and students no longer perform basic, sustained reading, which requires uninterrupted attention, focusing instead on electronically mediated images and fragmentary text communication (such as sms- and WhatsApp-messages), as well as frenetically pursuing social relations in cyberspace (on social media like Facebook), where Sherry Turkle (2011) has noted a certain 'performance exhaustion' on the part of teenagers.

By contrast, in this era of the 'space of flows' (Castells, 2010), the ability to sustain intellectual attention, as when one is reading a demanding book, or writing something that demands close, sustained attention to logical coherence and linguistic lucidity, has become a rarity, as Bernard Stiegler (2015) has argued at length. Instead, Stiegler has shown, the profit-driven 'culture industries' maintain a sustained attack on consumers' sensibilities through mnemotechnical devices such as smartphones and their attendant 'applications', capturing consumers' (including young people's) attention with a view to marketing the latest commodities – certainly *not* to make them aware of the spectre of an ecological cataclysm. The point is that the very same technical means that are robbing people, young and old, of their *savoir-faire* (know-how) and *savoir-vivre* (knowledge of how to live), can, and should, be used through teaching and learning to enlighten them – particularly the young – about ways to live that preserve and promote life instead. With the prospect of a worsening climate-crisis, they should certainly be employed to coordinate actions intent on ameliorating its worst effects, primarily in educational circles, to avert the very real possibility of extinction. Those of us who live in Africa are better positioned than the

rest of the consumption-driven world to drive such a project of eco-awareness and conscientisation, with the emphasis on critically informed action.

SOURCES OF LEARNING: MDA

If university and school curricula in (South) Africa were to be restructured, as argued here, according to the fundamental acceptance that all learning would be futile unless it be oriented to according the primordial value of life on Earth, then an indispensable component of the literature syllabus would have to be eco-critical literature, and what better than a powerful eco-critical novel by prolific South African novelist, Zakes Mda? I am thinking of Mda's novel, *The Heart of Redness* (2000), which resonates significantly with Joseph Conrad's arguably anti-colonial novella, *Heart of Darkness* (Conrad: no date), and for obvious reasons: where Conrad's narrative is set in the Belgian Congo at the height (or is it nadir) of colonial exploitation of Africa, Mda locates his narrative in the context of the neo-colonial exploitation of (South) Africa by capitalism, and gives it a complex eco-critical twist, to boot. I say 'complex', because Mda refuses to opt for a choice between the simple (and simple-minded) valorisation of a return to 'pure', unadulterated nature in the face of the neo-colonisation of relatively pristine land by corporations in the name of modernisation, and the (dubious) benefits of such modernisation in a small coastal community of Qolorha on the Transkei coast. Rather, he demonstrates that today there is no such choice available to people, given the history of intertwinement of colonial appropriation of the land (not only by people, but also by the alien flora and fauna they brought to Africa) and forms of resistance to this by indigenous peoples – something that still continues to this day.

Ingeniously, Mda stages this complex narrative as a kind of diegetic dialogue between two different, but connected, eras. The first is that of a previous age, when the amaXhosa under British colonial rule lost virtually all their cattle by responding to the prophetic vision of Nongqawuse, of a land purified of settler-contamination by the eradication of all their cattle – something that led to mass starvation among the amaXhosa and capitalised on by the British governor at the time, Sir George Grey, by appropriating Xhosa land for British settlers. This bygone era, when there was a split between the 'believers' (in the prophecy) and the 'unbelievers', personified by Mda in twin brothers, still echoes in the present, in the tension between contemporary 'believers' and 'unbelievers' regarding what one might call 'modernisation' or 'progress', were it

not for the complexity of even this opposition.

The aspect of the novel that is directly relevant for eco-teaching and -learning, comes into view through the choice faced by the local community: do they accept the offer of a corporation, to 'develop' their community with the provision of modern amenities like streetlights, jobs, and so on, in exchange for building a casino, or do they resist this in the interest of keeping their environment 'pure'? I put 'pure' in scare quotes because Mda deftly disabuses one of the illusion that 'purity' or harmony between humans and nature is still an option (or ever was, for that matter) – even in the 19th century, tribal authorities had to prevent members of the tribe from killing certain birds, for example, as his narrative shows. Mda allows the different positions – pro and contra, regarding the desirability of the casino – to play themselves out in the course of the narrative, with those resisting the threat of capitalist neo-colonisation provisionally 'winning' against the developers and those in the community that support it. I say 'provisionally', because Mda's text makes it clear that, given the constant change of communities and of ecologies, these are decisions that will have to be made over and over in the course of time.

Byron Caminero-Santangelo (2011, pp. 301-302) points out that Mda stages a confrontation, among others, between those who want to help the community resist the corporations in an authoritative, albeit well-meaning, manner (personified by Dalton, one of the leaders of the resistance, in the novel) and those who (represented by Camago), in Fanonian fashion, choose to formulate modes of resistance in dialogue with people from the community instead. Interestingly, Caminero-Santangelo (2011, p. 302) also detects a difference between Fanon's approach and Mda's: while the former concentrates on the 'nation', the latter focuses on the community in its relation to the surrounding ecosystem (and by implication the wider nation), which – as the novel demonstrates narratively – cannot be ignored by human communities, and requires a resolute cosmopolitan, combined with 'bioregionalist' approach. Caminero-Santangelo (2011, p. 302) sums it up as follows (2011, p. 302):

> In the context of the novel…`living' with nonhuman nature is not just a matter of living in a particular environment but also of seeing oneself as part of a community. The focus on ecological affiliation as one basis for geopolitical identification is perhaps the most salient 'bioregionalist' feature of *The*

Heart of Redness. The notion that humans are interdependently related to wider ecological communities comes into particular relief in the novel's representations of the ways that abrupt ecosystemic changes have drastic implications for human societies and cultures.

In sum, this complex literary work by Zakes Mda is paradigmatic of the kind of literary work that ought to form part of curricula for teaching and learning in (South) Africa, and indeed of the world, given its clear-headed exposition of the global situation, localised in a specific community, where local as well as global ecological, but also economic and hence political forces and changes come into conflictual relations with one another. In fact, I would argue that it provides a model for the questions that have to be considered when planning the eco-centred restructuring of curricula.

TWO PARADIGMATIC FILMS

There are diametrically opposed beliefs regarding the claim, that the earth is humanity's inalienable, originary home, which should be recuperated by adopting every possible measure to restore it to habitability. The current interest in the discovery of water on Mars (Sample, 2015), and what it might mean for possible human migration from the earth, is telling in this regard. Two recent films adopt diametrically opposing positions regarding this question. To be able to understand what is at stake, the narrative of each of these films has to be reconstructed briefly. One of them – Christopher Nolan's *Interstellar* (2014) – puts across the view that, as NASA scientist Dr Brand (Michael Caine), tells NASA pilot Cooper (Matthew McConaughey) in the film, humans "were meant" to leave Earth. Brand has been working on a theory that would, if successfully formulated, enable humans to use gravity to escape from the earth, where widespread crop blight has made it virtually impossible to produce food. In a nutshell, he convinces Cooper to volunteer for a mission to look for habitable worlds through a wormhole in space that others have travelled through before him, to pave the way for human migration to an alternative planet. This is Plan A, which is predicated on Brand's theory – still to be fully elaborated – that gravity could be harnessed to generate sufficient propulsion to enable the human race to break free from Earth's atmosphere en route to a different home. There is also a Plan B: the spacecraft that Cooper will pilot would have a cargo of 5000 frozen human embryos on board, should Plan A fail, in an effort to ensure humanity's survival. The intricacies of the plot are not

important here; suffice it to say that the relationship between Cooper and his daughter, Murphy, is central to it, to the extent that her successful solution of the equation that was Dr Brand's life ambition regarding Plan A – which he fails to carry through – depends, paradoxically, on her father (Cooper) transmitting crucial information to her at different times of her life after gathering relevant gravitational data from a massive black hole into which he and a robot plunge. In this way Murphy solves the theoretical problem that stood in the way of humanity's flight from their doomed 'home planet'. Although the main focus of the film narrative (and of all the special effects employed to make some of the 'deep space' sequences convincing) is on the question of the relation between time (and therefore mind-boggling differences in ageing on the part of characters) and space travel through 'wormholes', one cannot ignore the central assumption, if not principle, in the film, that human beings' presence on Earth has nothing to do with an inalienable bond between them and this planet, and that their sojourn here is at best contingent and subject to change.

Utilising Deleuze's distinction (2005, pp. 80-94) between different "time crystals" (the "perfect crystal", the "flawed [or cracked] crystal", "decaying crystal" and "crystal of seeds") in what he calls the "cinema of the time image", one could say that some of the scene-sequences in *Interstellar* exemplify images comprising a "crystal of decay". For Deleuze, a "time crystal" in cinema is an image or image-configuration that condenses a theme or themes in multifaceted format, so that one is able to analyse the film in question by disentangling the layers of signification as concentrated in the image functioning as a crystal of sorts. With regard to *Interstellar,* I am thinking particularly of 'crystal'-images and image-sequences evoking something like the notorious American 'dust bowl' of the 1930s, where, in several paradigmatic image-sequences, people, animals and cars are shown as being hardly visible through curtains of swirling dust. These cinematic images encapsulate or concentrate in themselves, like in a crystal, a decaying world, or a world increasingly incapable of sustaining life.

Interstellar also features what Deleuze describes as a "flawed crystal", insofar as the image of a 'wormhole' in space represents a 'flaw' through which humanity can flee from their decaying crystal to a different, habitable world. In this respect, a "flawed crystal" is the antithesis of a "perfect crystal" in more than one sense: whereas a "perfect crystal" in cinema instantiates the conceit of a

utopian world, where nothing is deemed to be lacking, more often than not the utopia turns out to be a dystopia – Charlie Chaplin's *Modern Times* (1936) readily comes to mind (for a thoroughgoing discussion of this, see Olivier 2012) – insofar as the internal disruption of time as a "perfect crystal" cannot conclusively be prevented. By contrast, "flawed crystals" in film denote either images of "flaws" such as endemic gender discrimination (for example, in Ridley Scott's *Thelma and Louise*; 1991), or of 'flaws' in a different sense, namely, a fissure or crack in an edifice or institution that offers a means of escape. The wormhole-image in *Interstellar* represents a "crystal flaw" in this sense, and simultaneously functions as an index of the film's rejection of the idea that the earth is humanity's originary home.

On the other hand, Alfonso Cuarón's recent film, *Gravity* (2013) can be described as a "crystal of seeds" in Deleuzian terms, insofar as its images function intermittently like "crystal seeds" – "entrances" or "openings" through which something novel may appear. Unlike Nolan's *Interstellar*, it adopts the position of a cinematic affirmation that the earth is humanity's home, and that even someone like the protagonist of the film, biomedical engineer Dr Ryan Stone (Sandra Bullock) – who has literally turned her back on the earth – can, in principle, rediscover *terra firma* as her originary home. In conversation with Lieutenant Matt Kowalski (George Clooney), Dr Stone reveals that she lost her daughter when the latter died young in an accident, and that since then she has struggled to find meaning in her life on Earth. Because of this ineradicably painful, traumatic experience on Earth, in a sense she has nothing to go back to there, and hence working on the Hubble telescope alongside the space shuttle Explorer, appears to be a welcome opportunity to escape from the mundane space of Earth, where she is constantly reminded of her irreversible loss.

When the space shuttle is irreparably damaged by a cluster of space debris, inadvertently caused by Russian destruction of a defunct satellite and travelling at high speed in orbit around the earth, Dr Stone and Lieutenant Kowalski find themselves in dire straits. Using a "manned maneuvering unit", they set out for the International Space Station, and on arrival there discover that it, too, has been damaged by the orbiting space debris. Moreover, the crew has evidently escaped in one of the station's two Soyuz modules, while the other one is no longer fit for returning to Earth because its parachute

has deployed prematurely. They, however, could still use it to reach the Chinese space station, Tiangong, and use a Chinese module to return to Earth. Out of fuel and with almost no oxygen left, Stone and Kowalski try to stop their momentum by grabbing at the International Space Station as they pass it. Stone's foot gets entangled in the Soyuz module's parachute cords, and although she gets hold of Kowalski's space suit, it becomes clear that their combined mass is too much for the cords, and Kowalski releases himself (drifting away to certain death) to enable Stone to enter the International Space Station. For a while he remains in radio contact with her, however, and continues encouraging and advising her while he can. To cut a long story short, after being forced to enter the Soyuz module and using its "soft landing jets" to reach Tiangong, which happens to be de-orbiting, Stone manages to use one of its modules to re-enter the earth's atmosphere, eventually landing in a lake, where she has to wriggle out of her space suit and swim to the surface after opening the hatch. The scene where she emerges from the capsule and kicks upwards, breaking the lake surface and gulping down the air, is an almost paradigmatic image-sequence of a rebirth of sorts. The woman who previously found that she had no reason left to want to be on the earth, eagerly embraces it as her home. This is the real, eponymous 'gravity' of the narrative, and viewers who do not 'get this', would be the poorer for it.

The entire sequence of cinematic images – from the time that Kowalski and Stone set out for the International Space Station through those that embody their, and eventually her, efforts to leave the inhospitable depths of space behind and return to Earth, to those final images capturing her fiery re-entry into the atmosphere, watery landing and emergence from the sinking capsule – is an image-concatenation that functions as a series of Deleuzian "crystal-seeds". It can hardly be otherwise, firstly because each of these images bears the imprint of time (mostly of time running out), and secondly insofar as every image concentrates in itself the preceding events as well as the "seeds" of possible, divergent trajectories of future events. Because events could have unfolded along different axes, these images have the status of "crystal-seeds", and as the narrative, embodied in these images, unfolds, it becomes clear which of the earlier, "virtual" seeds eventually germinate.

Comparing the scene-sequences in space with the final sequence where Stone swims to land and emerges, Venus-like, from the water, is instructive in the light of

the notion of *genius loci*. There is no *genius loci* 'in space', because there is no 'place' there, except perhaps when Dr Stone enters the International Space Station and eventually the Chinese module, which has an interior space that could pass as a 'place' of sorts. Perhaps one might say that the only *genie* that one senses in the space-scenes is a *malin genie*; hence Dr Stone's desperate attempts to return to Earth, despite her earlier misgivings about it because of the traumatic loss of her daughter in mundane spaces. At any rate, the contrast between *Gravity* and *Interstellar* is clear: while the latter instantiates a cinematic valorisation of the prospects of leaving the earth, which has become an inhospitable place to humankind (it is a moot question, whether this fictional scenario has been informed by the looming environmental crisis of today), the former is an affirmation of the value of the earth as humanity's true home – hence the wish to return to it on the part of the protagonist when the technological means to survive in space collapse. The title of the film, *Gravity*, is a succinct metaphor for the intrinsic human value of what one ordinarily takes for granted (the natural tendency to be 'drawn' to the earth's surface), and which the protagonist in the film learns to desire anew when caught in the weightlessness of space.

These two films demonstrate the power of cinema as a medium, in the first place, but also the inescapable fact that no cultural artefact can avoid being imprinted with a sense of (sometimes diametrically opposed) values – while *Interstellar* promotes the idea that humanity should jettison an Earth that has become uninhabitable, *Gravity* advances the exact opposite axiological (value-related) stance, that Earth is our Mother planet, and ought to be affirmed in that capacity. This is powerfully affirmed in visual terms toward the end of the film when Dr Stone is virtually 'reborn' from Earth's watery womb after her borrowed space capsule fell into a lake.

CONCLUSION

Finally, it should be abundantly obvious that my own axiological position in this paper is an unambiguous commitment to, and promotion of the irreplaceable, intrinsic value of the earth and all her creatures – 'intrinsic' because the time is finally past when humans could only attribute value in the sense of 'usefulness' to living beings insofar as they could be harnessed to and for sometimes dubious human ends. All living beings, including Gaia as a whole, are intrinsically valuable. It should be conspicuous, today – given all the easily accessible information to this effect – that

the conventional (and lamentable) anthropocentric attitude has brought humanity to the brink of the precipice of species-extinction, and that all avenues of recuperative action should be explored without wasting any time. Chief among these is teaching and learning, with all people in mind, but particularly oriented towards young people, for they are the leaders of tomorrow.

It is true that, as a benevolent critic has reminded me, the 'operationalisation' of the alternative pedagogy I have proposed here poses huge, if not insurmountable problems, not least of which is that Africa is already compromised to a large degree by its own neoliberal agenda(s), from which equally (morally) compromised politicians often benefit handsomely in economic terms. In respect of such obstacles, I want to reiterate what was briefly pointed out above, namely, that one should not hesitate to introduce 'activism' into university curricula as a topic, with a view to cultivating it as a praxis to be engaged in when needed. I have no doubt that such a need for activist practice will only grow in a world hurtling towards eco-catastrophe. As noted earlier, both Naomi Klein's (2014) and Emerson's (1841) work could be enlisted in the teaching of activist practice.

Then, lastly – also impressed upon me by my perspicacious critic – there is the pedagogic problem (already implicitly acknowledged above) of operationalising my proposals in the classroom. This includes the difficulty of finding effective ways to educate would-be teachers and lecturers who would possess both the interest in, and capacity for, availing themselves of a wide spectrum of teaching and learning materials (such as the ones repeatedly enlisted in this paper), including theoretical, literary and audiovisual texts, to enlighten, conscientise and activate a critical *practice* on the part of students and future teachers or lecturers. Nothing less than a critical, 'activist' praxis will stand a chance of changing the (disastrous) neoliberal conformist *status quo* to one where communities, and ultimately societies, can take responsibility for saving the ecology on which all living beings depend.

REFERENCES

Attenborough, D. (Dir.). (2006). *Planet Earth* [Documentary]. Britain: BBC.

Attenborough, D. (Dir.). (2016). *Planet Earth II* [Documentary]. Britain: BBC.

Cameron, J., & Landou, J. (Producers). Cameron, J. (Dir.). (2009). *Avatar*

[Motion Picture]. USA: Lightstorm Entertainment.

Caminero-Santangelo, B. (2011). In Place: Tourism, Cosmopolitan Bioregionalism, and Zakes Mda's, *The Heart of Redness*. In: E. DeLoughrey, and G.B. Handley (Eds), *Postcolonial Ecologies: Literatures of the Environment* (pp. 291-306). Oxford: Oxford University Press.

Castells, M. (2010). *The Rise of the Network Society*. Second edition. Oxford: Wiley- Blackwell.

Chaplin, C. (Producer & Dir.). (1936). *Modern Times* [Motion Picture]. Criterion DVD Collection. Released 2010.

Colebrook, C. (2014). *Death of the PostHuman: Essays on Extinction*, *Vol. 1*. Open Humanities Press.

Conrad, J. (No date). *Heart of Darkness*. Planet [PDF]. Retrieved 2018, January 26 from http://www.planetpublish.com/wp-content/uploads/2011/11/Heart_of_Darkness_T.pdf

Cuarón, A. & Heyman, D. (Producers). Cuarón, A. (Dir.). (2013). *Gravity* [Motion Picture]. USA: Warner Bros. Pictures.

Deleuze, G. (2005). *Cinema 2: The Time-Image*. Trans. Tomlinson, H., and Galeta, R. New York: Continuum.

Emerson, R.W. (1841). Self-Reliance. Retrieved 2015, July 7 from https://math.dartmouth.edu/~doyle/docs/self/self.pdf

Foster, J. B., Clark, B., & York, R. (2010). *The Ecological Rift – Capitalism's War on the Earth*. New York: Monthly Review Press.

Intergovernmental Panel on Climate Change assessment report (2014). Retrieved from https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_technical-summary.pdf

Kirschner, D., Mills, J. & Barbera, J. (Producers). Jacquet, L. (Dir.). (2013). *Once upon a Forest* (*Il etait une foret*) [Motion Picture]. Belgium and France: Bonne Pioche Cinema, France 3 Cinema, Rhone-Alpes Cinema.

Klein, N. (2007). *The Shock Doctrine. The Rise of Disaster Capitalism*. London: Penguin Books.

Klein, N. (2014). *This Changes Everything. Capitalism vs the Climate*. Toronto: Alfred Knopf.

Kovel, J. (2007). *The Enemy of Nature. The End of Capitalism or the End of the World*? Second Edition. New York: Zed Books.

Lovelock, J. (2010). *The Vanishing Face of Gaia. A Final Warning*. London: Penguin Books.

Mda, Z. (2000). *The Heart of Redness*. New York: Picador.

Nolan, C., Obst, L. & Thomas, E. (Producers). Nolan, C. (Dir.). (2014). *Interstellar* [Motion Picture]. USA: Paramount Pictures.

Olivier, B. (2010). *AVATAR*: **E**copolitics, technology, science and myth. *South African Journal of Art History*, *25* (3), 1-16.

Olivier, B. (2010a). Images and mediation. *South African Journal of Art History*, *25*(1), 34-46.

Olivier, B. (2010b). Cinema and communication**:** **'**Cinelogic' and 'cineaesthesis'. *Communitas*: *Journal for Community Communication and Information Impact*, 15, 39-55.

Olivier, B. (2011). Film as communicational mediation of the ecological crisis: *Avatar* and *The Road*. *Communicare – Journal for Communication Sciences in South Africa*, 30 (1), 66-85.

Olivier, B. (2012). Different 'percepts' of the human body in cinema. *South African Journal of Art History*, 27 (2), 79-97.

Olivier, B. (2015, October 30). 'Emerson, a much-neglected thinker'. *The Mail & Guardian*'s Thought Leader website. Retrieved from http://thoughtleader.co.za/bertolivier/2015/10/30/emerson-a-much-neglected-thinker/

Olivier, B. (2016, February 22). 'Climate change activism DOES work, even against a colossus'. *The Mail & Guardian*'s Thought Leader website. Retrieved from http://thoughtleader.co.za/bertolivier/2016/02/22/climate-change-activism-does-sometimes-work-even-against-a-colossus/

Perrin, J., Mauvernay, N., Barratier, C. & Eberts, J. (Producers). Perrin, J. & Cluzaud, J. (Dirs.). (2009). *Océans* [Documentary]. France: Pathé.

Perrin, J. & Elghozi, N. (Producers). Perrin, J. & Cluzaud, J. (Dirs.). (2015). *Les Saisons* [Motion Picture]. France/Germany: Pathé.

Sachs, J. (2018, January 11). A bold bid for climate justice. *CNN International Edition*. Retrieved from http://edition.cnn.com/2018/01/11/opinions/new-york-city-bold-bid-for-climate-justice-opinion-sachs/index.html

Sample, I. (2015). Nasa scientists find evidence of flowing water on Mars. Retrieved 2017, December 7 from *The Guardian*: https://www.theguardian.com/science/2015/sep/28/nasa-scientists-find-evidence-flowing-water-mars

Scott, R. & Gitlin, M.P. (Producers). Scott, R. (Dir.). (1991). *Thelma and Louise* [Motion picture]. USA: Metro-Goldwyn-Mayer.

Shiva, V. (1993). *The Violence of the Green Revolution. Third World Agriculture, Ecology and Politics*. London: Zed Books.

Shlain, L. (2003). *Sex, Time and Power. How Women's Sexuality Shaped Human Evolution*. New York: Viking Penguin.

Stiegler, B. (2015). States of Shock: Stupidity and Knowledge in the 21st Century. (Kindle edition). Trans. Ross, D. Cambridge: Polity Press. The Carbon Report. Retrieved 2018, January 23 from http://www.thecarbonreport.co.za/why-is-this-relevant-to-south-african-companies/

Turkle, S. (2011). *Alone Together*: *Why We Expect more from Technology and Less from Each Other*. New York: Basic Books.

Wallerstein, I. (1996). *Open the Social Sciences – Report of the Gulbenkian Commission on the Restructuring of the Social Sciences*. Stanford: Stanford University Press.

Wallerstein, I. (1996a). *Open the Social Sciences*. In Items: Social Science Research Council, 50 (1), 1-7.

Wechsler, N., Schwartz, P.M. & Schwartz, S. (Producers). Hillcoat, J. (Dir.). (2009). *The Road* [Motion Picture]. USA: Dimension Films.

World Animal Protection. Retrieved 2018, January 23 from https://www.worldanimalprotection.org/news/how-plastic-pollution-affecting-seals-and-other-marine-life?gclid=EAIaIQobChMIqrvp2OrAIVbbHtCh0TCQdxEAAYASAAEgIwKvD_BwE