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Editorial

DEVELOPMENT EDUCATION, CLIMATE CHANGE AND THE 'IMPERIAL MODE OF LIVING': 'THINKING INSTITUTIONALLY' ABOUT THE ECOLOGICAL CRISIS

Audrey Bryan

Recent scientific research describes the drought that occurred in Syria between 2007-2010 as having had a 'catalytic effect' on the country's civil war which has already claimed an estimated 200,000 lives and forced more than four million to flee the country – fueling a refugee crisis in the Middle East and Europe. As Kelley et al. observe:

> "Whether it was a primary or substantial factor is impossible to know, but drought can lead to devastating consequences when coupled with pre-existing acute vulnerability, caused by poor policies and unsustainable land use practices in Syria's case and perpetuated by the slow and ineffective response of the Assad regime" (2015: 3241-3242).

Also central to their analysis is the role that human influence on the climate system has played in fuelling the current Syrian conflict. They conclude that:

> "…anthropogenic forcing has increased the probability of severe and persistent droughts in this region, and made the occurrence of a three-year drought as severe as that of 2007-2010 two to three times more likely than by natural variability alone" (ibid).

In other words, the severe drought that was implicated in the death and displacement of millions of Syrians was the result of, or at least exacerbated by, anthropogenic or human-induced climate change.

While climate change has previously been thought of as a problem primarily affecting future generations, the Syrian example clearly demonstrates that the human impacts of climate change – including forced displacement, lost livelihoods, food and water scarcity, disease and increased political instability – are *already* being felt, particularly among poorer communities who lack the resources or physical and financial infrastructure that is necessary to protect themselves from climate-related events (Stern, 2006). Other examples, such as rising sea levels which are displacing the inhabitants of Small Island Developing States (SIDS), provide ample evidence that a climate catastrophe is *already* taking place and that human beings are deeply responsible for it.

'Individualising responsibility' versus 'thinking institutionally' about climate change

Despite the severity of an existing climate crisis, as well as the establishment of a consensus on the reality of human-induced climate change (Gupta, 2012), climate change is often treated as a low policy priority, relative to other national and environmental issues, particularly in areas where the effects of climate change are not directly felt, or with sufficient frequency to cause alarm. However, the scale and urgency of the crisis – as well as the weight of scientific evidence which demonstrates that human activity is responsible for global warming – calls for radical changes in how individuals, communities, governments, corporations, the energy industry, and international agencies think and act in relation to climate change (Mochizuki and Bryan, 2015). Mainstream educational efforts to address worsening environmental conditions have been criticised for their preoccupation with individual behavioural change, to the detriment of a consideration of wider institutional concerns. As Maniates (2001: 33) observes:

> "When responsibility for environmental problems is individualised, there is little room to ponder institutions, the nature and exercise of political power and influence in society – in other words, to 'think institutionally'. Instead, the serious work of confronting the

threatening socio-environmental processes … falls to individuals, acting alone, usually as consumers".

The same author cautions against the 'individualisation of responsibility' in relation to environmental problems on the grounds that it curtails our 'environmental imagination' and undermines our capacity to react effectively to environmental threats. In other words, if climate change is to be meaningfully addressed, it will require forms of justice-oriented action that focus not just on individual citizens' contribution to global warming, but also on altering the policies and practices of governments and industries that are accelerating the problem.

The importance of 'thinking institutionally' about climate change is underscored by the fact that nearly two thirds of all greenhouse gas emissions have been produced by just ninety multinational and state-owned companies, half of which were produced in the last twenty-five years alone, when it was *already* known how harmful the effects of greenhouse gases actually are (Heede, 2013). In other words, a relatively small number of entities – including companies such as Chevron Texaco, ExxonMobil, BP, Royal Dutch/Shell, Statoil and Saudi Aramco, as well as state-owned extractive industries in China, Poland and Russia – are responsible for producing the fossil fuels that are the primary sources of human induced greenhouse gases that are driving global climate change. Many if not all of these companies have proven recoverable energy reserves that will, if mined and emitted, further intensify climate change and greatly exacerbate the human, social, and political challenges associated with it. While these companies have strong economic incentives to access their energy reserves and oppose efforts to leave their carbon reserves in the ground, social, legal and political pressure needs to be applied to force them to meet their ethical obligation to help address climate destabilisation (Gardiner, 2011; Heede, 2013).

Even at the personal level, however, environmental educational efforts to promote more sustainable practices among individuals have met with limited success. As McKibben (2012: n.p.) puts it, human beings

appear to be 'fundamentally ambivalent about going green'. Psychologically speaking, human beings have the capacity for disavowal, i.e., the capacity to know and deny something at the same time. As Taubman (2012: 18) remarks, 'many of us hold that climate change is a reality, and yet, in our driving and consuming habits, we act as if we did not take it seriously'. Moreover, since many of the behaviours and practices that contribute to climate-related harm are rooted in social and cultural norms, and make life more convenient, manageable, and pleasurable for people, they are difficult to change. In fact, tackling climate change has been likened to 'build[ing] a movement against yourself' because of the practical, social and psychological benefits cheap fossil fuels provide – directly or indirectly – to those who live in greenhouse gas intensive economies (McKibben, 2012, n.p). In other words, complex social-psychological as well as political-economic realities make it extremely challenging to bring about the radical reduction in emissions that climate change demands.

While individuals might appreciate the importance of ecologically sustainable modes of living, the way that societies within emissions-intensive economies are currently organised makes it is very difficult for them to radically reduce their emissions (Kawall, 2011). The discrepancy between a relatively high level of awareness of the ecological crisis on the one hand, and insufficient political and social change on the other is highlighted by Brand and Wissen (2013, who argue that 'fossilist' patterns of production and consumption – which are deeply rooted in everyday norms and institutional practices in the global North – are at the heart of the problem. These consumption and production patterns – which imply a disproportionate claim on global resources, global sinks and labour power – form the basis of what Brand and Wissen refer to as an 'imperial mode of living' in the global North which is quickly being generalised to rapidly industrialising countries in the global South. These authors argue that advanced capitalism is unable to fix its own environmental contradictions and is therefore inherently incompatible with sustainable development. Educationally speaking, this implies the need to foster a very different set of social norms and practices and to engage learners with opportunities to reflect on the broader political-

economic contexts which shape their lives and their relationship to the environment, so that collectively they can explore possibilities for how human and social systems can be structured differently (Gowdy, 2008).

Development education and climate change

Collectively, the articles in this edition of *Policy and Practice* offer a robust framework for what the educational response to the climate crisis should look like. **John Sweeney's** paper highlights the essential scientific, policy and ethical underpinnings of any educational response to climate change which need to be included if the 'conjoined challenges of climate change and sustainable development' are to be meaningfully addressed. Pointing to the need for improved communication between climatologists and development educators, Sweeney equips us with a vocabulary and set of organising principles that are essential to ensuring climate justice. His paper also addresses some of the key obstacles preventing climate justice from being realised. He observes that, internationally, progress towards achieving climate stabilisation has been fraught, as national economic self-interest trumps global concerns about climate change.

Kagawa and Selby are similarly critical of what they describe as 'the blandness of the international response to climate change and climate change education', which they attribute to the failure of international summits and frameworks to engage with neoliberalism as a root driver of climate change and a corresponding failure to mainstream the holistic and transformative educational response that the climate crisis warrants. Kagawa and Selby interrogate the 'business-as-usual' approach to global governance frameworks to address sustainability and climate change. Their critique highlights important limitations of the post-2015 development agenda, such as the new Sustainable Development Goals' (SDGs) continued emphasis on capitalist growth (as measured by Gross Domestic Product (GDP)) and their concomitant failure to address dangerous levels of corporate extraction and consumption by wealthy countries. This calls for critical engagement on the part of the development education sector with international frameworks that serve a 'compensatory legitimation' function for wealthy, capitalist countries

– frameworks that are not designed to bring about major changes to the 'business-as-usual' approach to international development, but rather to restore legitimacy in the face of widespread inequality and crises by ameliorating some of the oppressive conditions produced by a system that is structurally unjust (Klees and Qargha, 2013). Kagawa and Selby consider how – in the face of complacency in a time of great urgency – the development education sector might respond to the climate crisis through its education and advocacy.

Mary Clarke Boyd and Therese Hume consider the role for development education as an 'inter-discipline' in the tertiary education sector – an environment which they maintain is still primarily disciplinary-focused, particularly at undergraduate level. Identifying core pedagogical principles and strategies of development education, Clarke Boyd and Hume explore the potential of placing development education at the core of all curricula and suggest that it that can play an important role in cultivating the broader learning capacities that are required to address complex problems of sustainability and unsustainability. These authors also usefully engage with the complex psycho-social processes which prevent people from 'seeing' their responsibility for climate-related catastrophes in other parts of the world and identify concrete examples of initiatives at the higher education level that have enabled sustainability issues to be addressed in an interdisciplinary manner.

One such example is described by **Benjamin Mallon** in his Perspectives article which draws directly on his subjective experiences of teaching about climate change in an Initial Teacher Education context. Mallon argues that climate change education offers development educators the opportunity to explore a range of global development challenges in an integrated way and calls upon development educators to consider climate change as an aspect of many, if not all, major contemporary challenges.

Sarah O'Malley draws on research with educational practitioners as well as parents and their children to consider how children interpret the

natural environment through an examination of the dynamic relationships between environmental education, education for sustainable development and development education. Her research reveals the limitations of environmental concepts underpinning environmental education in empowering learners to think critically about, and respond meaningfully to, the environmental crisis. She concludes by advocating for a 'truly reflective multidisciplinary approach' to teaching and learning about the natural environment.

Due to their close relationship with the land, indigenous people – comprising about 6 percent of the global population – have been observing and reporting the impacts of global warming for several decades and are trying to cope with and adapt to these changes. Climate change issues are of particular interest to indigenous people, not just because they have a particular physical and spiritual relationship with land, water, and associated ecosystems and tend to be among the most vulnerable to climate change, but also because they have a specialised ecological and traditional knowledge relevant to finding the best solutions (Gerrard, 2008). **Simon Eten's** paper makes the case for the revitalisation and inclusion of indigenous knowledge in education in Africa. Eten illuminates the 'innumerable benefits' that indigenous knowledge can bring to development and to climate action in particular.

Addressing the risks of climate change requires *global* as well as *local* action to reduce greenhouse gases and to reduce vulnerabilities to climate change impacts. The relationship between the local and the global – and how they shape each other in mutually interdependent ways – is one of the central organising principles of development education. When climate change is framed as a local issue, it enhances learners' sense of connection to and understanding of climate change; allows for engagement with practical, concrete issues and initiatives; promotes the development of local and regional solutions that could be applied to the national and global arenas; and inspires future action on a global scale (Centre for Research on Environmental Decisions, 2009). **Grace Walsh's** Perspectives article

documents an 'immersive' development education experience at Cloughjordan's Ecovillage in Co. Tipperary which included practical, voluntary based activities and workshops focused on climate change, sustainable development and community resilience. Walsh offers a useful framework for experiential learning which affords participants the opportunity to witness first hand a community-based response to reducing carbon emissions.

Collectively, the articles in this issue of *Policy and Practice* offer considerable direction for the development education sector in terms of how to engage more productively with the environmental and social crises posed by climate change. The cross-cutting nature of climate change poses an unprecedented challenge to political leaders and policymakers as it requires governments to address traditionally separate issues in an interconnected manner and transform the way they approach economic and development polices. The need for effective cross-sectoral structures to ensure dialogue and 'joined up thinking' in relation to climate change education planning is therefore a key priority for effective climate change policy and practice.

Development education lends itself directly to social justice and critically-oriented approaches to education, namely those approaches which: emphasise the root causes of social and global problems; offer a critical assessment of social, political, and economic structures; and focus on collective strategies for change. Addressing climate change from a development education perspective enhances learners' capacity to think about how political power operates. It also increases their capacity to hold the agencies and institutions which are most implicated in global warming to account and encourages them to imagine alternatives to existing political-economic arrangements and ideologies which promote unjust global relations and practices.

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Focus

CLIMATE CHANGE AND DEVELOPMENT EDUCATION: NEW OPPORTUNITIES FOR PARTNERSHIP

John Sweeney

Abstract: Despite different evolutionary paths, development education and environmental education are increasingly finding a common focus in addressing climate change issues. Realising the synergies this offers requires both sets of practitioners to grasp the essential underpinnings of climate science, policy and ethics. This paper presents the principal authoritative sources that development educators should be guided by. Achieving a successful partnership will involve reconsideration of concepts of development as well as of relationships between the developed and developing worlds. The urgency of achieving radical changes in approach is stressed as the time scale for effective global and national actions to tackle climate change diminishes and crucial decisions under the United Nations Framework Convention on Climate Change become imminent.

Key words: Climate change; development education; climate science; climate policy; climate justice.

In his visit to Ireland in 2015, the UN Secretary General Ban Ki Moon emphasised the inseparability of development issues with climate change issues when he said: 'Ireland has been a champion of efforts to counter hunger, but today one cannot be a leader on hunger without also being a leader in climate change' (2015). At first sight this might seem an unfamiliar juxtaposition. Traditionally, the roots of hunger and underdevelopment have been ascribed to historical legacies such as colonial exploitation (Rodney, 1981) or environment-related obstacles to food production such as unfavourable soil and climate conditions (Sachs, 2001), or environment-related diseases such as malaria (Bhattacharyya, 2007). To these, other

factors such as illiteracy, agrarian structures, the low division of labour, and poor communications and infrastructure are also frequently added (Kuhnen, 1987). Whatever the balance of causes, though, underdevelopment and environmental conditions have complex inter-relationships and cannot be considered in isolation from each other. Climate change considerations further complicate these linkages and this paper explores the scientific, ethical and policy dimensions this introduces.

Development and environmental education concepts

The evolution of development education and environmental education concepts have enabled a better handle on the nature of the linkages between underdevelopment and environmental conditions to be achieved via a focus on sustainable development (Hogan and Tormey, 2008). The hoped for integration between the two strands, however, has not been smoothly achieved, and development education and environmental education have not coalesced as expected around a core which might be characterised as education for sustainability. Wade (2008) argues that this is partly a consequence of a developed world outlook that lacks the capability of employing a truly holistic perspective on the human and natural worlds. However, the evolution of development education approaches has also been profoundly affected by other factors, most notably the tidal wave of globalisation and neoliberal economics which has swept across the landscape. Reconciling concepts of social and environmental justice with the overwhelmingly dominant economic paradigms associated with global capitalism is proving very difficult. Selby and Kagawa (2011) discuss the risk of what they describe as a 'Faustian bargain'. By situating approaches within the existing economic paradigms in an effort to gain short-term traction with the neoliberal market place agenda, they suggest that development education and education for sustainable development risk losing opportunities to pursue long-term transformative goals based not on a culture of endless growth. Into this complex interplay, the emergence of climate change as an important new dimension can be seen as both a complication, but also a potential unifying ingredient. It can be suggested that a focus on climate justice and environmental sustainability offers a roadmap for

development education to find effective ways of engaging with global decision makers and local development practitioners.

The Secretary-General's contention reflects the growing realisation that any development strategy for the developing world cannot succeed unless the threats posed by climate change can be resolved. There can be, for example, no satisfactory trajectory of development for 160 million Bangladeshis without addressing the impact of their vulnerability to sea level rise. The loss of 20 percent of their land area with an inevitable 1 metre rise in sea level will entail coping with the forced relocation of tens of millions of its people. There can be no development strategy for many low-lying island states of the Pacific and Indian Oceans – countries such as Tuvalu, Kiribati, The Maldives – which face the loss of their entire national territory and the possible extinction of their culture. Similarly, the reliability of water supplies on which development often hinges is increasingly uncertain. How will the burgeoning megacities of South America and Asia expect to sustain their populations as the glaciers in the Andes or Himalayas they depend on for their water supply vanish? Even within smaller communities, such as those in central Africa around the Rwenzori or Kilimanjaro mountains, similar concerns exist.

Climate science, climate policy and climate justice have become intertwined and have gained considerable traction in the public consciousness as awareness of the shortening timescales for effective action has become clear. This link has now been recognised by development agencies throughout the world and some agencies, such as Trócaire, have now refocused their activities towards issues of climate justice and climate policy. This does not represent a dereliction on the part of development agencies of their previous emphasis on the eight Millennium Development Goals (currently being reworked into a new set of Sustainable Development Goals for the post-2015 period). Rather it represents a recognition of the bridging role that climate change considerations can provide in addressing them. Development education thus increasingly requires a more holistic perspective, one that moves away from traditional economic paradigms and

especially one that incorporates what is essentially the conjoined challenges of climate change and sustainable development.

Bringing the climate change dimension into development education

A perspective on how climate change issues can be integrated into development education requires three dimensions to be considered: the science, the policy dimensions and the ethical underpinnings.

Grasping the science of climate change

Firstly, the science of climate change must be grasped as far as possible by development educators. This can be difficult, since mostly development educators do not come from a mainstream scientific background and face sometimes contradictory perspectives in the media they encounter. Though the climate sceptic community has dwindled as the global scientific consensus on anthropogenic climate change has become more robust, there are still shrill voices at national and international levels who provide music to the ears of those who seek to procrastinate. However, the Intergovernmental Panel on Climate Change (IPCC, 2013) is unequivocal in its findings for example that, with a certainty level of 95-100 percent, human influence has been the dominant cause of the warming that has occurred over the past fifty years. Indeed their best estimate is that *all* of the warming over that period has been anthropogenically driven. It is now clear also that 2014 was the warmest year yet recorded since instrumental observations became reliable in the nineteenth century (NOAA, 2015), and current indications are that 2015 will surpass this (Thompson, 2015). Anyone younger than thirty years of age has never experienced a month in which the average surface temperature of the Earth was below the average of the entire twentieth century. Many of the changes in the frequency and severity of extreme events such as heatwaves, droughts, intense rainfall and storminess are also likely linked to human influences (IPCC, 2013).

However, irrespective of the solidity of the science, there is still a sizeable proportion of the general public who are in denial. Any report of a

weather or climate event on the internet is still usually followed by a long list of vitriolic, and frequently naive, comments. Overcoming this remains an obstacle for both science educators and development educators. That climate change is a matter of scientific fact, and not belief, has to be tackled by objective evidence-based science such as provided by the IPCC.

Policy implications of the impacts of climate change in particular locations

Secondly, development education has to be able to present an understanding of the likely impacts of climate change as a prerequisite to the development of appropriate policies for both mitigation and adaptation. Quantifying impacts at national and international levels provides policymakers with the ammunition to achieve this (Charlton et al., 2006). This could facilitate how governments and donors prioritise spending on particular sectors of the economy, such as flood protection or renewable energy. Again, the IPCC provides the basic information about key risks and resources, while national studies fine tune the response. In encouraging that response, development education has a role in sensitising residents of developed countries of their responsibilities to limit their own contributions to global climate change, and of their own self interest in doing so. For Ireland, for example, model projections suggest future warming rates similar to the global average with 1-1.5^{o}C warming over the 1961-90 average likely within the next twenty years. Though less confident, we can project winter increases and summer decreases in rainfall for Ireland as being likely to occur, and feed such projections into hydrological, biogeographical and agricultural models to assess likely impacts in these sectors (Coll et al., 2014; Sweeney et al., 2008). Impacts of sea-level increases on vulnerable cities such as Dublin can also be quantified (Flood and Sweeney, 2012). These impacts all have substantial domestic cost implications which reinforce the importance of a shared approach to climate change management being signalled as part of any development education strategy.

For many developing countries, rainfall reliability changes and a significant increase in the frequency of extremes are the crucial aspects and such changes are indeed already occurring in places such as East Africa

(Schreck and Semazzi, 2004). Modelling of such impacts at a global scale suggests key areas where water stress for example is likely to increase, or where sea level rise threatens settlements and infrastructure. Just as with the developed world, informed policies of adaptation can then be developed. Projected sea level rise impacts for example have already led to Kiribati purchasing land in Fiji (2,000 km distant) to provide a potential relocation option should sea-level rise submerge the Pacific Island nation.

For development educators the balance between mitigation and adaptation is important to stress. Mitigation seeks to avoid projected future climate scenarios by reductions in greenhouse gas emissions. Adaptation anticipates that some change is inevitable and seeks to prepare communities to cope better with expected impacts e.g. by water storage technologies or crop changes. Carbon dioxide has a residence time in the atmosphere of around a century, meaning that the impacts felt today are attributable to the cumulative emissions of the past century. This implicates the developed world as a primary cause of the impacts currently being felt in the developing world. Developing countries are thus not the primary agents of their own climate change woes. This is the basis of the current calls for a 'loss and damage' mechanism at international negotiations and also for the application of the Principle of Common But Differentiated Responsibility discussed later in this paper. Global mitigation efforts are therefore essential to ensure basic requirements such as food and water are available for the next generation and to ensure future global sustainability. In this context the IPCC *4th Assessment Report* (2007) painted a scenario of an 80-95 percent reduction in greenhouse gas emissions for developed countries by 2050 as being required to have a reasonable chance of the planet avoiding 2°C of warming. For developing countries however, especially the poorest, substantial mitigation is not feasible since their emissions are so low. Adaptation is however urgent since many of the adverse impacts of climate change are now inevitable. Adaptation is thus proportionately much more important for development educators to address e.g. coping with water shortages, crop substitution, civil protection etc.

Integrating concepts of climate justice

Thirdly, development education must recognise that climate change issues are ultimately framed within a set of well-established ethical and moral principles expressed by common global agreements and UN frameworks for cooperative action. Indeed, where the science has failed to convince the public, and the economic arguments regarding impacts have failed to sway the policy makers, ethical considerations offer an important avenue of opportunity to remind individuals and especially decision makers of their responsibilities to take actions based on the 'common good'. A number of guiding principles are relevant here to development education.

The Precautionary Principle, widely used since its incorporation in the Rio Declaration of 1992, states that where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. Uncertainty will always exist when dealing with a chaotic and complex system such as the atmosphere. Models of future climate conditions will never be perfect and the underlying socio-economic drivers of such models will always be problematical. Future population, energy, transport systems, food, industrial infrastructure, pollution, technology will never be forecast with certainty. Yet these are necessary inputs to projections of future climate change scenarios. Equally, a complete understanding of the workings of the climate system will always limit the ability of climate models to project future conditions with absolute certainty. But it is important not to allow uncertainty to be an excuse for inaction and development educators should stress the signals the best science is giving. It is important not to make the same mistakes with climate, for example, as were made regarding the smoking/health link where action was long delayed due to the erroneous promotion of uncertainty arguments.

Development education must also consider the Principle of Common but Differentiated Responsibility. This is based around considerations of equity and any form of development education must emphasise equity principles. The principle is closely related to the concept of

climate justice which argues that the global South is entitled to the resources and technology to make a transition to a low carbon economy on the basis that developed countries bear most culpability for the present problem. For example, Ireland emits more greenhouse gases in a given year than the 400 million poorest people on the planet. While both Ireland and the 400 million poorest people have a common responsibility to protect and preserve their common resource – the atmosphere – the scale of effort appropriate is obviously very different. Developed countries have the economic and technological capacity to do much more than their counterparts in the developing world. Common but Differentiated Responsibilities reflects the general acceptance by developed countries of their greater historical contribution to the accumulation of greenhouse gas emissions, in addition to their relatively greater resource capacity to develop and take remedial action. This is the mechanism whereby the sharing out of the remaining carbon budget among nations should be made. However, national self-interest intervenes to subvert this principle and many countries resist subscribing to any international agreement that they consider inconsistent with their specific national interests (McKibben and Wilcoxen, 2002). As a consequence, the polluter frequently does not pay.

The Polluter Pays Principle argues that the utilisation cost of the atmosphere must be paid for proportionately by those who pollute it. All sectors of society should bear appropriate costs. Access to the atmosphere should not be on the basis of the power of vested interest groups or narrowly defined national self-interest. Burdening the remainder of society with costs in terms of additional fines, impact costs or disproportionate changes in their quality of life is not acceptable from a moral perspective. However the principle is a long way from being operationalised. Policy frequently exhibits a disconnect between the short term interests of the polluter and the long term interest of the community. For example, globally, consumer subsidies for fossil fuels are estimated at around $548bn, while subsidies for renewable energy are approximately $121bn (IEA, 2015).

The Principle of Intergenerational Equity argues that we 'hold the natural and cultural environment of the Earth in common both with other members of the present generation and with other generations, past and future' (Weiss, 1990). The question of what legacy we bequeath to the next generation in terms of a climate-change damaged earth is central to this principle. The awareness that climate change will adversely affect even the present generation of children has sharpened the focus on this aspect. In what may turn out to be a significant legal interpretation of this principle, eight petitioners, some as young as thirteen years, successfully prosecuted the Department of Ecology in Washington State in the US in June 2015. The judgement ordered the defendants to consider and act within two weeks on state-wide reductions in CO_2 emissions based on the best available science concerning climate change. A similar verdict was delivered as a result of litigation in the Netherlands (Lin, 2015). The lesson is clear for countries such as Ireland. The cost of delayed or ineffective action on climate change in Ireland will accrue to today's Irish children and their descendants. Equally, the relevance for potential class actions based on the Principle of Intergenerational Equity for children in the developing world is clear.

Exploiting the synergies between climatologists and development educators

Climatologists and development educators occupy separate 'silos'. Improved communication between them is essential and mutually beneficial, especially for aiding contingency planning in the area of disaster management. Forecasting of extreme events such as cyclone landfalls, intense rainfall events, storm surges etc. have obvious benefits in terms of minimising civilian casualties in countries where the poor and marginalised often occupy the known vulnerable locations. For medium-term issues, interaction is also highly beneficial. For example, knowledge of a developing El Niño event in the Pacific enables farmers to plant more appropriate crops. In northern Peru, two of the main crops, rice and cotton are highly sensitive to the rainfall regime. Rice does well in wet conditions while cotton can cope well with drier weather. A reliable forecast of wet El Niño conditions can thus be used to advise farmers to grow more rice that season while a forecast of dry

La Niña conditions would produce advice to grow more cotton instead. Similarly, Sahelian rainfall forecasts have been used to provide farmers in Senegal with adaptive strategies (Ndiaye et al., 2012). Obvious advantages also exist for advance stockpiling of food aid where an unfavourable rainfall forecast is provided. There is no good reason why the implementation of weather and climate adaptation strategies by on-the-ground development practitioners should not be part of the development education curriculum.

Development education must seek to further improve this two way interaction. Development educators bring to the table a skill set of sensitivity and understanding of culture and social considerations which scientists generally lack. The Irish Aid-supported Transformative Engagement Network brought together academics from Maynooth University with their counterparts in three universities in Zambia and Malawi to explore opportunities for transformative change around issues of climate and food security. Working from individual village communities in some of the poorest parts of the world, this has led to fundamental reframing at both an academic and village-level of how climate change adaptation should proceed. It has exemplified the need for development educators to reconcile indigenous knowledge, such as taboos and traditional religious practices, and developed world 'science' (Murphy et al., 2015) in approaching climate change adaptation. Essentially it has emphasised the need for the two communities of climate science and development education to deepen their interaction.

Many similar examples of mutual benefit could be given and it is interesting that perhaps the most obvious area of collaboration thus far has come in the area of disaster management. In 2012 the IPCC produced a special report on how integrating expertise in climate science, disaster risk management, and adaptation could help better manage the risks of extreme events and disasters associated with climate change (IPCC, 2012). This was the first such bringing together of the two communities at a global scale, involving 220 authors, 62 countries and 18,611 review comments.

In guiding development educators through the science/policy/ethics maze associated with climate change it is important that authoritative sources be signposted. This extends beyond the confines of science to incorporate a multidisciplinary research and learning agenda at a global scale. Some primary starting points are offered below.

The Intergovernmental Panel for Climate Change

The IPCC is the authoritative voice of climate science. It was established in 1988 by the United Nations Environment Programme and the World Meteorological Organisation as a partnership between climate scientists and governments to supply an objective perspective of the current state of knowledge regarding climate change and its likely impacts. It is important to stress that the IPCC neither carries out any research itself, nor does it make any policy recommendations to governments regarding what needs to be done to address problems in their own jurisdiction. This is a very different approach to that traditionally employed in development education where policy intervention is more overt. The hands-off principle of the IPCC has enabled it to produce authoritative assessment reports every five or six years for a quarter of a century. These constitute the most extensively reviewed publications ever produced on the planet. Every line in such reports is scrutinised by thousands of scientists across the world and final versions sanctioned by government representatives of the 195 member countries at a large plenary meeting. As is traditional with UN bodies, unanimity is required meaning that the Assessment Reports tend to be expressed in conservative, qualified language. Every Irish government has signed its assent to each of the five assessment reports produced since 1990.

One key finding of the *5th Assessment Report* (AR5) is particularly relevant to engaging those concerned with development education. This relates to the strong link established between cumulative emissions of greenhouse gases and the consequent global temperature rise. It is now clear that a global warming of just under 1°C has accompanied a cumulative emission of approximately 515 Gt of carbon (1Gt is 10^9 tonnes) since the industrial revolution commenced. To have a reasonable chance of avoiding

2ºC of warming, cumulative emissions of 900 Gt would be the maximum permitted. Thus there are only 275 Gt of carbon for future generations to burn (IPCC, 2013). Currently the annual emission rate is approximately 10 Gt of carbon and rising, meaning we have approximately two decades before the window of opportunity closes, effectively for the foreseeable future. This realisation brings a sharp focus to all of the principles discussed above, especially that of Intergenerational Equity and Common but Differentiated Responsibility.

The United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC) was one of three Conventions adopted at the Rio Earth Summit of 1992. The other two Conventions related to halting biodiversity losses and combating desertification. In both of these, progress has been significantly less than hoped for. In both, the failure to address climate change over the past twenty-five years is also implicated. Biodiversity and desertification cannot be halted without firstly tackling climate change. This objective was expressed in the UNFCCC as: 'stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system' (UNFCCC, 1992). There is a subtle distinction in the definitions of climate change used in the IPCC reports and the UNFCCC. The former includes natural and anthropogenic causes while the UNFCCC is concerned only with anthropogenic aspects. In addition, for a long time the definition of 'dangerous' was not clarified by either the scientific or policy communities. The IPCC was reluctant to specify a value since it might be seen as policy prescriptive. Many policymakers were reluctant to expose themselves to possible legal actions if their actions did not match policy objectives. However the EU Council (Heads of Government) in 2005 effectively designated dangerous climate change to be a warming of the planet by more than 2ºC above pre-industrial levels, and such a figure was endorsed by the UNFCCC at subsequent Conference of the Parties (COP) meetings.

The UNFCCC remains the only global agreement addressing the problem of climate change and is best known among the public for its annual COP meeting which takes place at the end of the year. The twenty-first such meeting (COP21) is scheduled for Paris in November/December at which a global agreement to limit greenhouse gas emissions to a safe level is hoped for; to take effect from 2020. As preparation for this, each country is required to submit its Intended Nationally Determined Contribution, essentially a pledge regarding what level of ambition they can offer to keep warming below 2°C. The EU and its member states are committed to a binding target of an at least 40 percent domestic reduction in greenhouse gas emissions by 2030 compared to 1990. If successful this would be the first international agreement to include both the developing countries and the developed countries in a shared strategy. While a second commitment period for the Kyoto Protocol will exist in the run up to 2020, entailing reductions of 18 percent on 1990 levels, this will only involve a smaller number of nations and less than 15 percent of global emissions.

Laudato Si

One of the most influential statements on the need to integrate climate change and development education has come from the Papal Encyclical *Laudato Si* (Pope Francis, 2015). This calls for an ethical and economic revolution to prevent catastrophic climate change and growing inequality. Climate change is not simply an economic issue, it is argued, but one with immense moral and ethical dimensions, especially as they relate to the developing world.

The encyclical explores the interconnections between climate change and poverty from an ethical and moral perspective, in addition to a theological perspective. In particular, the importance of 'integral ecology' is emphasised. It is argued that combating poverty (and by implication tackling development issues) demands an integrated strategy which includes the protection of nature. Considerations of intergenerational equity and of what is termed 'the common good' are seen as an essential building bricks to grow human solidarity towards the protection of the natural world. In what is an

endorsement of the environmental movement from the world's oldest and largest international organisation, the encyclical calls for urgent and far reaching cuts in greenhouse gas emissions to be agreed at the Paris COP and stresses the need for an internationally supervised agreement to ensure national and local efforts deliver on their commitments. The failings of political leadership are emphasised and praise for the work of non-governmental organisations and civil society groups in holding politicians, paralysed by vested interest groups into inaction, is offered.

More specifically related to development educators, the encyclical also calls for education systems to raise awareness of the gravity of today's cultural and ecological crisis. This is where the importance of what is termed integral ecology, the need to educate individuals to understand the interconnections between the social and environmental, is stressed. Such a holistic perspective is not currently the dominant paradigm in either ecology or development education, and as such, offers a useful insight for both.

Development education therefore needs to move away from an economically based, consumerist emphasis, where Gross National Product (GNP) is the measure of a developing nation's worth, to a more holistic environmental-based vision with a more enlightened vision of what 'development' actually means. A key consideration therefore for the developed world is the need to facilitate a development trajectory that will enable the developing world to realise a different sustainable future and not repeat the unsustainable trajectory of the developed world.

Developing country perspectives on climate change: Paris and beyond

In the forthcoming international agreement, the mitigation efforts of the least developed countries cannot be expected to match those from the developed countries. The bulk of the efforts from the global South will centre on adaptation. This requires a technology transfer from the global North which is ultimately of mutual benefit. However it also requires a sustained financial

transfer. This has proven to be one of the key sticking points in the international negotiations.

Climate finance for developing countries

Climate finance for developing countries will increasingly be relevant to development education programmes. Seen as additional to existing supports, the magnitude of the anticipated flows has considerable potential to synergise development strategies. A long term commitment to make available $100bn a year to developing countries by 2020 from a variety of sources has been agreed to support financial, technological and capacity-building actions. What has become known as the Green Climate Fund is expected to become the principal multilateral financing mechanism to support climate mitigation and adaptation in developing countries. To date, pledges amounting to over $10bn have been made over a four-year period with actual provision of finances from developed countries falling considerably short of the projected total commitment.

Although $100bn may seem an extremely large sum to envisage transferring to aid climate change adaptation, it represents a relatively modest global effort, probably insufficient to achieve the objectives sought. To place the total amount in context, the International Energy Agency (IEA, 015) estimated that consumer subsidies for fossil fuels in 2014 amounted to US$510bn, five times the envisaged Green Climate Fund, and four times the equivalent subsidies for renewable energy. A commitment to fully funding the Green Climate Fund will be a central demand of developing countries at COP21 in Paris.

Loss and Damage

What is likely to become one of the most significant decisions relating to developing country financing of adaptation came from COP16 (Cancún). This was a commitment to address the costs of damage associated with climate change. In a sense this was a practical implementation of the 'polluter pays' principle whereby loss and damage in the most vulnerable developing countries would entail financial reparations being made by

developed countries. Recommendations as to what the next steps should be are scheduled for 2016, though more concrete actions are likely to be part of any agreement in Paris.

Conclusions

It is increasingly clear that development issues cannot be resolved in isolation from tackling climate change, and vice versa. Development education must therefore adjust to this reality by integrating this interdependence into a central position in curricular development. This will require development educators grappling with climate science and enhancing their awareness of impacts and policy responses.

It is clear that climate mitigation and adaptation considerations will provide the parameters within which future development strategies will increasingly be set. The legitimate clamour for climate justice emanating from the developing world will only get stronger as the inequalities of the current global economic system become starker and as climate change impacts worsen. Development educators must therefore also realise the importance of recognising and addressing the incompatibilities of national policies in their own developed countries which worsen the climate burden of developing countries. Several principles can be invoked to guide appropriate responses, but these must first overcome powerful short term vested interests.

It is important that development education is informed by authoritative sources, and this will require networking with a wider range of professional expertise than hitherto. Many examples exist where on-the-ground success stories arise from such collaboration. Development is also intimately tied up to 'integral ecology' and must promote a view of the world which does not over-emphasise development as being measured solely by material economic criteria. A broader global consensus based on planetary boundaries and global stewardship will be required (Rockström et al., 2009). Nonetheless, the developed world will ultimately have to recognise that its long term interests lie in facing up to its historic responsibilities for inducing adverse climate change impacts in the developing world. As such,

considerable financial transfers will be required to assist sustainable development in the global South. While some progress towards progressing this can be expected at meetings such as the Paris COP21, fundamental decisions will ultimately have to be made at other international bodies such as the World Trade Organisation. The comments of the UN Secretary-General quoted at the commencement of this paper may well turn out to be prophetic as population growth and food insecurity telescope the time scales for adverse climate change dislocation into matters of years rather than decades, with all the consequences this brings for accentuating the social, economic and political problems of the developing world.

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THE BLAND LEADING THE BLAND: LANDSCAPES AND MILESTONES ON THE JOURNEY TOWARDS A POST-2015 CLIMATE CHANGE AGENDA AND HOW DEVELOPMENT EDUCATION CAN REFRAME THE AGENDA

Fumiyo Kagawa & David Selby

Abstract: After overviewing the global climate change threat, **Fumiyo Kagawa** and **David Selby** identify elements that would comprise comprehensive climate change education of transformative intent. In the light of this, they go on to critically review the presently emerging post-2015 development and climate change agenda as encapsulated in the Sustainable Development Goals. They also scrutinise the outcomes of four gatherings feeding into that agenda – the World Conference on Education for Sustainable Development, the Lima Climate Change Conference, the World Conference on Disaster Risk Reduction and the World Education Forum. They discern a signal failure to engage with neoliberalism and its workings as a root driver of climate change and a correlative failure to mainstream the holistic and transformative educational response that the climate crisis warrants. They end by suggesting how development education might play a formative role in reframing the post-2015 agenda.

Key words: Climate change; climate justice; disaster risk reduction; neoliberalism; Sustainable Development Goals; education for sustainable development; development education; climate change education.

The global climate change landscape

With the great 'Burns Night Storm' of 25 January 1990 raging all around him, English lepidopterist Mathew Oates, felt assailed by animosity. 'The anger – or was it hatred? – in the sky that day filled me, not so much with awe, but with fear. Having seen that apocalyptic sky it was no longer possible to deny climate change as a reality' (Oates, 2015: 222).

Oates' moment of intuitive conviction about the climate change threat – something before and since experienced by millions – now chimes with the scientific consensus. That consensus says that unchecked climate change poses a self-inflicted existential risk to humanity (Klein, 2014: 15; Selby, 2015a: 113). In their latest summary of the science of climate change, the international collectivity of scientists comprising the Physical Science Working Group of the UN Intergovernmental Panel on Climate Change (IPCC) confirmed that the warming of the global climate system is 'unequivocal' with 'many of the observed changes unprecedented over decades to millennia,' that it is 95 percent certain that largely through voracious use of fossil fuels, 'human influence has been the dominant cause of the observed warming since the mid-20th century,' and that 'limiting climate change will require substantial and sustained reductions of greenhouse gas emissions' (2013: 4, 17, 19).

Hard on the heels of the physical science report of the IPCC came the report of a second working group focusing on the impacts and risks of climate change and on adaptations that would be needed to lessen human vulnerability to risk. This report identifies 'key risks' related to 'dangerous anthropogenic interference with the climate system' including serious erosion of ecosystems and cultural systems (with only limited adaptive capacity); increasing incidence and severity of extreme weather events (the 'hatred' Oates felt in his bones?); increasingly uneven distribution of climate impacts with disadvantaged people and communities suffering most; extensive biodiversity loss; increasing food insecurity; and abrupt and irreversible singular events such as the final collapse of the polar ice sheets, and the implosion and burning of the equatorial rainforests (IPCC, 2014, 12). The authors identify a range of 'interacting social, economic and cultural factors' that have been 'incompletely considered to date' but are having and will have a bearing upon climate change and its impacts on interlinked human and natural systems. Those factors include 'wealth and its distribution across society, demographics, migration, access to technology and information, employment patterns, the quality of adaptive responses, governance structures, and institutions to resolve conflicts'. Their call is for 'exploration

of a wide range of socioeconomic futures in assessment of risks' (ibid: 11). 'Throughout the 21st century', the report goes on to say, 'climate-change impacts are projected to slow down economic growth, make poverty reduction more difficult, further erode food security, and prolong existing and create new poverty traps' (ibid: 20).

These two recent IPCC reports are suggestive of an agenda for formal, informal and non-formal child/youth and adult education that would equip learners with the knowledge and understandings as well as the proactive capacities and dispositions for addressing the existential risk that is climate change. The physical report speaks to learning that comprehensively explores the processes and dynamics driving and following from the warming of the planet (i.e. the mechanisms and physical repercussions of the so-called 'greenhouse effect'). The impact report speaks to wider learning that comprehensively addresses the social and economic drivers as well as the social and economic ramifications and reverberations of climate change.

So far, climate change learning has generally been corralled in physical geography and science disciplines and more or less limited to the science of global warming and to 'green' technological fixes for climate change mitigation and adaptation (UNESCO/UNEP, 2011: 55). There is a hidden agenda of 'business as usual' in which the social and economic drivers behind the heating of the planet are denied curricula space and, hence, any critical interrogation by learners. Those drivers include the triumphalist neoliberal economic growth and economic globalisation models and their culpability in fomenting climate change. They also include the insatiable levels of consumerism in the global North and amongst elites in the global South (Selby, 2015b; Selby & Kagawa, 2011a). Then, at a fundamental cultural-psychological level amongst the affluent, are the processes of avoidance and denial that keep 'eyes wide shut' (Hilman at al., 2007: 85) to the impacts of their lifestyles and, for both affluent and poor, an increasing removal from immersion in natural place that renders us less ready to protect nature and, hence, more passively compliant in its ruination, something Monbiot (2012) calls the 'second environmental crisis'. These, too, are

important features in the climate change education landscape and need to be included in learning programmes designed to break out of the mould of 'business as usual' (Selby, 2015b; Selby & Kagawa, 2011a).

Compounding the lack of transformative intent in many current climate-change learning programmes is a failure to address climate justice. Climate justice education helps learners understand how climate change impacts are already falling unequally on nations and communities in the global South who bear least responsibility for greenhouse gas emissions and looks at the 'why' and 'how' of restorative justice on the part of polluting nations through social justice lenses. Climate justice education also seeks to foster a value system that will ensure welcoming, humanitarian responses in host countries to migrants displaced by the impacts of climate change (Selby, 2015c).

The two recent IPCC reports were issued as the international community followed three intersecting roads towards a post-2015 development and climate change agenda. The first was the road determined at the UN Conference on Sustainable Development (Rio+20) in 2012 where world leaders agreed to forge a new development agenda to build on but also supersede the Millennium Development Goals that were due to lapse in 2015. The second was the road to Paris leading to the December 2015 twenty-first session of the Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) with its goal of achieving a comprehensive international agreement on climate action to keep global surface temperatures below a 2^{o}C increase on pre-industrial levels. The third involved the development of a post-2015 disaster risk reduction framework. What follows is a critical scrutiny of the 2014 and 2015 journeys along each road. We enquire if the nettles of climate change and transformative climate change education are indeed being grasped. Our article ends by proposing ways in which the development education sector might reframe the agenda setting through its education and advocacy policy and practice.

The sustainable development landscape

The eight Millennium Development Goals (MDGs) – eradicate extreme poverty and hunger, achieve universal primary education, promote gender equality, reduce child mortality, improve maternal health, combat HIV/AIDS, malaria and other diseases, ensure environmental sustainable development, develop a global partnership for development – were proclaimed 'with surprising unanimity' (Lewis, 2005: 3) at the UN Millennium Assembly in 2000. Interestingly, the notion of sustainable development already very current in 2000 and the 'three-pillar' understanding of it as having economic, social and environmental dimensions – something encapsulated in the Millennium Declaration itself – were not captured in the actual Goals. At Rio+20 in 2012 the decision was made to forge a new post-2015 development agenda with sustainable development at its core (Matenga, 2015: 280-281). The process of determining Sustainable Development Goals (SDGs) was thus set in train with an intergovernmental Open Working Group (OWG) mandated to orchestrate their draft development through a refreshingly multi-voice, participatory process. OWG deliberations took place between March 2013 and July 2014 at which point a report was submitted to the UN General Assembly. The Assembly adopted the report as the 'main basis' for the post-2015 agenda in September 2014 (Adams & Tobin, 2015: 5; Ford, 2015).

There are seventeen SDGs, for the realisation of which 169 somewhat more concrete targets have been laid down. We enumerate below just a few of the goals that are particularly germane to our unfolding argument:

- End poverty in all its forms everywhere (SDG 1);
- Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (SDG 4);
- Promote sustained, inclusive and sustainable economic growth (SDG 8);

- Reduce inequality within and among countries (SDG 10);

- Ensure sustainable consumption and production patterns (SDG 12);

- Take urgent action to combat climate change and its impacts (SDG 13);

- Promote peaceful and inclusive societies for sustainable development (SDG 16).

(Sustainable Development Knowledge Platform, 2014)

Looking behind the broad aspiration of the seven SDGs listed we find, *inter alia*, the following targets:

- By 2030 build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters (SDG 1, Target 5);

- By 2030 ensure all learners acquire knowledge and skills needed to promote sustainable development, including among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development (SDG 4, Target 7);

- Sustain per capita economic growth in accordance with national circumstances, and in particular at least 7% per annum GDP growth in the least-developed countries (SDG 8, Target 1);

- Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning (SDG 13, Target 3).

A number of things merit remark. First, noticeable through its absence in the SDG process and outcomes has been any attempt to offer a precise working definition of 'sustainable development'. Those making the real decisions have felt more comfortable with not shining too bright a light on meaning. There has likewise been an absence of acknowledgement that the term is of disputed meaning and value. 'The current hype around using sustainable development as an anchor for the next wave of international development goals', writes Chrispin Matenga (2015: 281), 'seems to be oblivious to the fact that sustainable development is still a contested concept'. Much of that contestation surrounds whether 'sustainable development' is coterminous with 'sustainable growth'. Unremitting economic growth is at the core of the globalised neoliberal economic model, a model widely held to be the backbone of structural causes of poverty and the culprit behind 'persistent levels of poverty and climate change' (McCloskey, 2015). Or, put another way, it is a 'hegemonic force blocking transitions towards genuine sustainability' (Huckle & Wals, 2015: 491).

The SDG development process and the SDGs themselves have become riddled with fudge to sooth the neoliberal behemoth. As we have seen, SDG 8 calls for 'sustained, inclusive and sustainable economic growth', something widely held to be incompatible with social, cultural and environmental sustainability. Target 4 under the same goal had the qualifier 'endeavor' added ahead of an original text that read 'to decouple economic growth from environmental degradation'. SDG 13 on climate change was the focus of a constant battle in OWG negotiations with more powerful countries, the greatest emitters of greenhouse gases, arguing that the subject should be left out of the post-2015 sustainable development agenda. Resistance by the Small Island Developing States ensured its retention as an SDG when a rider that climate change was primarily a UNFCCC responsibility was added to the text. The outcome is a weakened SDG 13 in

which targets for keeping the global temperature rise below 2^0C, for linking climate change mitigation with the phasing out of fossil fuel use and for climate justice initiatives are missing. Regarding SDG 12 ('Ensure sustainable consumption and production patterns'), a sop to the corporate sector was a rather toothless Target 6: 'encourage (not 'require') companies, especially large and transnational companies, to adopt sustainable practices'. Seeing the neoliberal lie of the land, the Campaign for People's Goals on Sustainable Development is clear that the SDGs taken as a whole would not ensure environmental sustainability in that they 'do not face up to what it will take to stay within the environmental ceiling – especially with unlimited GDP growth as the driving economic paradigm' (Adams & Tobin, 2014: 13-14, 21-2).

The educational SDGs and targets are lacking in many significant respects. SDG 4, Target 7, on education for sustainable development and other 'adjectival' educations omits mention of climate change education, disaster risk reduction education (i.e. education for disaster preparedness, to mitigate disaster drivers and to build community resilience) and biodiversity education although these three 'educations' were the key action themes for the second half of the 2005-2014 Decade of Education for Sustainable Development (UNESCO, 2010). The balance of 'educations' listed under Target 7 reflects the weighting against the environmental sustainability dimension that has been discerned across the SDGs (Adams & Tobin, 2014: 21). Target 7, not altogether unexpectedly, fails to reference learning that exposes the growth economy and consumerism to scrutiny and likewise draws back from intimating that learners explore no-growth and de-growth or 'steady state' economic alternatives and lifestyles. SDG 13, Target 3, on climate change education is similarly bereft of alternatives to 'business as usual' and, while making general mention of education on climate change mitigation, adaptation and impact reduction, fails to specify consideration of the drivers pushing us towards and through the 2^0C barrier. No clear links are made to education for disaster risk reduction. It is instructive in this regard that the UNESCO publication exploring 'how education can contribute to the proposed post-2015 goals' foregoes the opportunity to

elaborate on Target 13 and, blandly, restricts itself to recommending climate science education ('One vital role education can play is in improving understanding of the science behind climate change and other environmental issues') and to the rather platitudinous assertion that 'education helps build resilience and reduce vulnerability in the face of climate change impacts' (UNESCO, 2014a: 11-12).

While Gerard McCann (2015: 331) is right to suggest that 'Building on the fragile platform of the MDGs, the Sustainable Development Goals present an opportunity to reverse some of the damage caused by market fundamentalism over the past twenty years', we are not overly optimistic. But are we expecting too much of a set of goals and targets hammered out on the anvil of diverse national interests? We address that question in the final section.

Milestones along the road towards the post-2015 development and climate change agenda

Milestone 1: UNESCO World Conference on ESD, Aichi-Nagoya, Japan [November 2014]

To mark and celebrate the close of UN Decade of Education for Sustainable Development (DESD), 2005-2014, UNESCO and the Government of Japan organised the World Conference on Education for Sustainable Development (WCESD), under the banner of 'Learning Today for a Sustainable Future.' Held from 10 to 12 November 2014 in Aichi-Nagoya, Japan, the overall objectives of the conference were to provide an opportunity to review and consolidate DESD outcomes and set the agenda for further promoting ESD beyond 2014. WCESD adopted the *Aichi-Nagoya Declaration on Education for Sustainable Development*. It also launched the *Global Action Programme (GAP) on Education for Sustainable Development* as the official follow up to DESD.

The *Declaration* affirms ESD as a 'vital means of implementation for sustainable development' and as 'an enabler for sustainable development'

(UNESCO, 2014c). WCESD participants were apparently in 'clear agreement' on the important role of ESD in contributing to sustainable development (Lotz-Sisitka, 2015: 7). That 'agreement', however, again appears to have been built upon the cosy but highly questionable assumption that everyone was reading from the same page regarding what 'sustainable development' connotes. As with the SDG process, the contested nature of the term was by and large ignored. Applying words from a commentary on the World Summit on Sustainable Development of 2002, it was 'as if engaging in this discussion could potentially ruin the "whole idea" and slow down its world-wide implementation' (Jickling & Wals, 2008: 6)

Uncritical acceptance of economic growth within the articulation of education for sustainable development inevitably builds incompatibilities and irreconcilables into WCESD outcomes. The *Declaration* stresses, for instance, that ESD 'is an opportunity and a responsibility that should engage both developed and developing countries in intensifying efforts for poverty eradication, reduction of inequalities, environmental protection and economic growth' (UNESCO, 2014c). This wraps together mutually contradictory aims in that the 'neoliberal economic medicine' in pursuit of economic growth (McCloskey, 2014), a cocktail of 'privatization of the public sphere, deregulation of the corporate sector, and lower corporate taxation, paid for with cuts in public spending' (Klein, 2014: 19) has, if anything, deepened structural poverty, exacerbated inequalities and undermined environmental protection. This makes exceedingly problematic the WCESD assertion that ESD should be integrated with, on the one hand, pro-social and pro-environmental SDGs – such as those on poverty reduction, nutrition; health and wellbeing; gender equality and empowerment; biodiversity and ecosystems and oceans and seas – while also calling for links between ESD and the economic growth SDGs. Likewise, linking ESD with SDG 13 on climate change, while also linking it with the economic growth SDGs makes for irreconcilable bedfellows, for, as Naomi Klein (2014: 19) puts it: 'market fundamentalism has, from the very first moments, systematically sabotaged our collective response to climate change, a threat that came knocking on the door just as the ideology was reaching its zenith'. In this light, the suggested

ESD contribution to 'processes of transitioning to green economies and societies' (Lotz-Sisitka, 2015: 8) is likely to be appropriated for purposes of green washing in aid of the neoliberal agenda unless the economic growth ideology and its structural injustices and environmental impacts are also addressed head-on.

The blandness infusing WCESD stretches to the concept of educating for 'global citizenship', a term appearing in both the *Declaration* and *Global Action Programme*. In the *GAP*, global citizens are described as 'those who engage and assume active roles both locally and globally to face and to resolve global challenges and ultimately to become proactive contributors to creating a more just, peaceful, tolerant, inclusive, secure and sustainable world' (UNESCO, 2014d). Fair enough, but can critical and creative proactivity ever be realised without laying the drivers behind 'global challenges' fairly and squarely on the table? And does the idea of 'global citizenship' water down the fundamental importance of place-rooted local and bioregional responses to climate change and other issues? Unless flesh is put on the idea of 'acting globally' by unpacking the nature of the nexus between local/immediate learning and engagement and global concern and solidarity, it remains a rather nebulous aspiration offering what has been described as a 'placebo', 'band aid' or 'soft' response to global injustice (Bryan, 2015: 199), Pollyannaish in texture.

The *Declaration* makes only passing reference to climate change and omits mention of climate change education (UNESCO, 2014c). According to the WCESD programme (UNESCO, 2014e), only one workshop (out of thirty-four) had a climate change theme while two side events (out of twenty-five) addressed climate change-oriented topics. Although the *GAP* (UNESCO, 2014d) acknowledges climate change impacts on the most vulnerable groups (i.e. girls and women, Small Island Developing States, Africa), the idea of climate justice education is nowhere articulated. Such climate-lite treatment conveys both an explicit and implicit message that climate change is neither urgent nor core to ESD.

Milestone 2: UNFCCC Conference, Lima, Peru [December 2014]

A month later, in the early hours of 14 December 2014 exhausted delegates from the 195 countries represented at the tenth meeting of COP, Lima, Peru, agreed to the *Lima Call for Climate Action.* The meeting had gone on for some thirty-two hours longer than scheduled, itself an indication of the deep and unresolved divisions and tensions between developed and developing nations on climate change, as was the dearth of clean, easily assimilable outcomes in the final text. The *Call for Climate Action* 'would have put Thomas Jefferson to sleep … It is both mincing and dense' (Kessler, 2014). The remit of the meeting had been to provide clean direction so as to better enable the next UNFCCC conference, the planned December 2015 Paris conference, to deliver a legally binding, comprehensive climate change agreement that would come into effect in 2020, a target originally laid down by the 2011 UNFCCC meeting held in Durban, South Africa (UNFCCC, 2011).

It had been anticipated that the bilateral climate change pact by China and the US announced just before the Lima conference and committing both countries to converting to low carbon economies would galvanise delegates and loosen entrenched positions but the 'sclerotic UN climate negotiating system, which (had) now run for twenty-two years with little concrete result, rapidly reasserted itself' (Lean, 2014). In consequence, the best that was achieved was a series of watered-down agreements and half-baked or deferred decisions. In a significant breakthrough, it was agreed that both developed and developing countries would make pledges – 'intended nationally determined contributions' or INDCs - on the extent to which they would control greenhouse gas emissions beyond their existing plans. But this concession by developing countries was only gained at the cost of transparency in that the obligation to pledge was limited to those 'ready to do so' and was weakened still further by the *Call for Climate Action* failing to lay down ground rules for pledges and by making optional the provision of 'quantifiable information' and time frames for implementation. Any ready basis for comparability was thus undermined. A synthesis assessment of whether the national pledges, taken together, would be sufficient to keep the

world within the agreed 2^0C rise in pre-industrial surface temperatures was, bizarrely, scheduled for release a mere month before the Paris conference (UNFCCC, 2014a).

Longstanding deep divisions between developed and developing countries over climate justice reasserted themselves with a vengeance in Lima. Essentially the developing countries, the most vulnerable and most severely affected by climate change, were looking for finance in support of climate change adaptation from the rich countries, the historic CO_2 polluters, not least given their acceptance of the INDC process. The rich countries, in post-recession austerity mood, collectively pledged as little as US$10 billion to a new Green Climate Fund, even in the light of economists' advice that helping developing countries pursue lower carbon development tracks and so become more resilient would be a sound long-term investment (Carbon Brief, 2014; Kessler, 2014). This in turn led to developing country intransigence on INDC pledge transparency.

As Harjeet Singh of Action Aid International put it:

> "We came to Lima hoping that these negotiations would finally deliver what's needed to help poor people adapt to the effects of climate change. These hopes were in vain. As the Peruvian glaciers melt, and farmers around the world face dry rivers and warmer temperatures, the need for support could not be clearer. Yet the demand for adaptation and finance has been repeatedly ducked. It's as if the world has already forgotten that climate change is already causing unprecedented loss and damage" (Leach & Evrenos, 2015).

To this we might add the startling failure not just at Lima but throughout the long UNFCCC process to significantly pull back the curtain on the prevailing neoliberal economic model and its culpability in fomenting rampant consumerist excess in the global North, structural poverty in the global South as well as runaway climate change.

Education was addressed at Lima in the shape of *The Lima Ministerial Declaration on Education and Awareness-raising* (UNFCCC, 2014b) issued by ministers and heads of delegation attending the conference. The *Declaration* has about it an unremitting business-as-usual blandness. It recognises that 'education and public awareness programmes should promote the changes in lifestyle, attitudes and behavior needed to foster sustainable development and climate protection and to prepare our societies to adapt to the impacts of climate change'. It underlines that public support for 'transformation is necessary now to avoid more serious consequences in the future' without in any way indicating the nature and direction of the envisaged transformation. It stresses that education plays a fundamental role in achieving 'climate-resilient sustainable development' again without any elucidation. It also encourages all governments to 'include the issue of climate change in curricula' but holds back from giving any notion of what that might mean in practice (what 'issue' in particular? which subjects? which grades? how frequently? how systematically?). It finally calls for a re-emphasis on the importance of education in the global agreement to be forged in Paris in December 2015.

In our more naïve earlier days, we were always happy to welcome the legitimation that such bald statements from on high brought to our radical change efforts. We wonder now whether all they do is provide educational jurisdictions with a get-out clause allowing them to put up a smokescreen of token response that deflates the prospect of transformative educational change. While it is clear that too much depth and detail cannot be expected of outcomes from an international gathering of representatives of different states and divergent educational cultures and systems, we ask ourselves, too, whether the Lima outcome is symptomatic of the 'de-clawing' process of which Bryan (2015: 195-197) writes in which topics of radical moment are skillfully appropriated and depoliticised by the forces of neoliberalism and so neutered and made 'respectable'.

The *Lima Call for Climate Action*, it has been noted (Stavins, 2014), covers four pages while its annex constitutes thirty-seven pages of options

tabled for further deliberation in Paris in December 2015! With a world set on course to dangerously exceed a 2^0C rise in surface temperatures, Lima provides a study in prevarication and deferral, of Nero fiddling while Rome burns.

Milestone 3: Third World Conference on Disaster Risk Reduction, Sendai, Japan [March 2015]

Against a backcloth of quickening incidence and increasing severity of disasters globally, representatives of 168 governments met at the World Conference on Disaster Risk Reduction in Kobe, Japan in 2005. There they adopted the *Hyogo Framework for Action (HFA) 2005-2015*. Sub-titled *Building the Resilience of Nations and Communities*, HFA laid out a strategic and systematic approach to reducing risk from natural hazard. While each of five identified priorities carried implications for the education sector, it is HFA Priority 3 that had most direct relevance for education in its call to national and local jurisdictions to 'use knowledge, innovation and education to build a culture of safety and resilience' (UNISDR, 2005). It is HFA Priority 3 that led to participating countries agreeing to integrate disaster risk reduction learning into school curricula by 2015 (UNISDR, 2009; 2011).

In 2011 the UN General Assembly called upon the United Nations Office for Disaster Risk Reduction to orchestrate a process leading to the development of a post-2015, post-Hyogo disaster risk reduction framework (UNISDR, 2015a). The culmination was the holding of the Third World Conference on Disaster Risk Reduction (WCDRR) in March 2015. The Conference adopted the *Sendai Framework for Disaster Risk Reduction 2015-2030* (UNISDR, 2015b). The *Sendai Framework* lays out a number of guiding principles, one of which is that 'disaster risk reduction is essential to achieve sustainable development' (ibid: 10). There is throughout the document an appreciation that sustainability and resilience building are positively correlated and sustainability and vulnerability negatively correlated, i.e. that a vulnerable, non-resilient society or community will sooner or later prove unsustainable. The *Framework* also makes clear that climate change is exacerbating the frequency and intensity of disasters and

asserts that 'more dedicated action needs to be focused on tackling disaster risk drivers' that include climate change but also, *inter alia*, poverty and inequality, unplanned urbanisation, poor land management, unsustainable use of natural resources and declining ecosystems (ibid: 7).

The *Framework* seeks to build upon the educational impetus of its HFA predecessor. Participating states are enjoined to 'build a culture of prevention and education on disaster risk' and there is a strong insistence on child and youth proactive engagement in resilience building. 'Children and youth are agents of change', the text says, 'and should be given the space and modalities to contribute to disaster risk reduction, in accordance with legislation, national practice and educational curricula' (ibid: 20). States are also called upon 'to promote the incorporation of disaster risk knowledge, including disaster prevention, mitigation, preparedness, response, recovery and rehabilitation, in formal and non-formal education, as well as civic education at all levels, as well as professional education and training' (ibid: 11). Education is also seen as having a significant role in 'Building Back Better' in actual post-disaster recovery, rehabilitation and reconstruction contexts (ibid: 12).

Some comment. It is noteworthy that, while the Sendai conference and *Framework* make much of linking disaster risk reduction and sustainable development this is not reciprocated in the SDG process or through the Nagoya ESD conference and *Declaration*. In the same way, the Sendai *Framework* makes much of linking climate change and disaster risk while the Lima conference and its *Ministerial Declaration on Education and Awareness-raising* stays silent on the topic. We wonder why? Sendai is altogether firmer in its insistence on 'coherence across sustainable development and growth, food security, health and safety, climate change and variability, environmental management and disaster risk reduction agendas' (ibid: 10). It is also firmer about addressing the underlying drivers behind different manifestations of the global condition and in recognising the importance of localism and local action. 'While the drivers of disaster risk may be local, national, regional or global in scope, disaster risks have local

and specific characteristics that must be understood for the determination of measures to reduce disaster risk' (ibid). We note, however, that the Sendai gathering and outputs duck identifying economic growth as a driver exacerbating the level of risk in the world but, rather, see it as part of the solution.

Milestone 4: The World Education Forum, Incheon, South Korea [May 2015]

The World Education Forum (WEF) held in Incheon, South Korea, from 19 to 22 May 2015 was heralded as one of the most important high-level policy making platforms aimed at informing the post-2015 education agenda as it sought to 'galvanize the education community around a common vision for Education 2030' (UNESCO 2015a: 1). It adopted the *Incheon Declaration*, i.e. *Education 2030: Towards inclusive and equitable quality and lifelong learning for all*, and made an in-principle agreement on an implementation plan, the *Framework for Action* that was to be adjusted according to the outcomes of the UN Special Summit on Sustainable Development in New York in September 2015.

The *Declaration* and *Framework for Action* mark part of a concerted effort to place the global educational agenda within the overall international development framework, rather than keeping educational goals and development goals separate (UNESCO, 2015b).

According to the *Declaration,* the 'new vision for education' is to 'transform lives through education' by 'recognizing the important role of education as a main driver of development' and in the achievement of the Sustainable Development Goals. The vision is inspired by a 'humanistic vision of education and development based on human rights and dignity; social justice; inclusion; protection; cultural, linguistic and ethnic diversity; and shared responsibility and accountability' (UNESCO 2015c, paragraph 5). But in articulating a vision for education for the next fifteen years, the *Declaration* makes no reference to current and future impacts of climate change that will have profound repercussions for society as a whole and for

successive generations of learners during that period. Similarly, the draft *Framework for Action* does not mention climate change as one of the challenges to which the education system 'must respond' although it does list economic challenges (e.g. labour market and unemployment), social challenges (e.g. political instability, demographic challenges, persistent poverty and widening inequality, threats to peace and safety) and environmental challenges (e.g. environmental degradation, competition for natural resources) as well as challenges thrown up by technological advances. We have, in short, a 'common vision for Education 2030' that is climate change-myopic if not climate change-blind.

We can't go on meeting like this: how development education can occupy a new landscape

Some 1,100 delegates attended WCESD in Aichi-Nagoya. UNFCCC COP in Lima attracted 6,817 registered participants but, adding registered observers and media personnel, a total of 12,531 persons were in attendance (UNESCO, 2014b). The Sendai disaster risk reduction conference attracted some 6,500 delegates and 900 accredited journalists (WCDRR, 2015). The Incheon World Education Forum had 1,500 participants. According to Rajendra Shende (2015), the Lima event alone exceeded the annual carbon emissions of smaller countries such as Fiji and Malawi. This not inconsiderable contribution to the heating of the planet carried with it what Shende describes as the 'Columbian Risk'. Christopher Columbus set out in search of 'East India' by crossing the Atlantic, arrived at the wrong place but never admitted as much, calling what he had 'discovered' the land of the 'Indians'. In the same way, after Lima and other UNFCCC annual gatherings, climate negotiators 'continue to declare that they have reached their destination and achieved the objectives of UNFCCC when, in reality, they are always far from it'.

We are suggesting that the picture is even more smoke and mirrors in that self-satisfaction over limited achievement is more than matched by studious avoidance of the elephant in the conference room: the neoliberal economic project, how it is exacerbating, even causing, the confluence of

social and environmental crises we face, and how it is enervating any seriously radical move towards alternative social and environmental relations.

A refreshing moment on the bland and fumbling road to Paris has been the 18 June 2015 publication of Pope Francis' encyclical, *Laudato Si,* with the title *On Care for Our Common Home.* A 'bit like Naomi Klein in a cassock' (Fraser, 2015), the Pope has penned a text of landmark significance roundly addressing issues – including climate change, consumerism, irresponsible development, environmental degradation – that have been largely left untouched in the international discourse we have reviewed. He argues that preserving the climate 'represents one of the principal challenges facing humanity in our day' (Pope Francis, 2015: 25). The current model of development adversely affects the quality of life of most humanity thus showing that 'the growth of the past two centuries has not always led to an integral development' (ibid: 46). International economic/political debate treats the vulnerable 'merely as collateral damage' (ibid: 49). The 'extreme and selective consumerism' of a small part of the world's population needs to be counteracted (ibid: 50). 'The market cannot guarantee integral human development and social inclusion' (ibid: 109). What is needed is 'integral ecology' that sees environmental and social issues as an unbroken whole (ibid: 141). What is needed is a 'new economy, more attentive to ethical principles' (ibid: 189). The environment 'cannot be adequately safeguarded or promoted by market forces' (ibid: 190). Looking at things differently allows us to realise that 'a decrease in the pace of production and consumption can at times give rise to another form of progress and development' (ibid: 191). Reflecting on all of the above, there needs to be 'education for a covenant between humanity and the environment' (ibid: 216-221).

Pope Francis also expresses frustration at how successive World Summits have 'failed to live up to expectations' on the environment through their 'lack of political will' (ibid: 166), something echoed by those who have taken to the streets and/or who are working for social and environmental

transformation at the grassroots level (Leach & Evrenos, 2015). So how, in the circumstances, might the development education sector respond through its education and advocacy policy and practice? Confronted by such complacency in a time of great urgency, how might it reorient the debate and stir the pot?

First, development education can play a pivotal role by bringing fresh frames to bear upon climate change discourse.

Laurence and Alison Matthews (2015: 17) make the point that climate change as brought to gatherings such as UNFCCC is framed in a particular way and this leads to outcomes that never get to the root of the matter. They take as an example a seemingly unexceptional twelve-word statement used as a rationale for gatherings such as Paris 2015: 'Our response to climate change is to seek international agreements on emissions'. They see the use of 'response' as framing climate change as something that is 'just happening' and beyond human purview. 'Staying in the response frame is like rearranging deckchairs on a sinking ship instead of fixing the hole in the hull'. Stopping or limiting climate change would offer a more deeply proactive framing going far beyond climate change adaptation. 'International' also seems unexceptional but in framing the issue as one *between* nations rather than arising from and to be addressed within a global system, it opens the way to posturing and bargaining between nations and places greatest weighting on perceptions based on what are seen as political realisms rather than ecological limits.

The focus on 'emissions' itself concentrates attention on where emissions take place rather than their 'upstream' sources. 'Wouldn't it be a historic turning point', they ask, 'if the negotiators at Paris listened, ditched the international game-playing, and adopted a single, global, fair and effective upstream system instead?' The report, *Finding Frames* (Darnton & Kirk, 2011) calls for a reframing of the international development agenda to ensure horizontal dialogue by replacing concepts such as charity, aid, development and communication with words such as justice, partnership, wellbeing and dialogue/conversation. In a similar way, the climate change

development agenda calls for a framing that focuses upon social and economic drivers and their mitigation, climate justice and injustice, climate change avoidance and denial, the ethics and morality of global warming, and its social and economic effects.

Second, development education as a field should more critically engage with hegemonic neoliberal frames and their outworkings and embed that engagement in its education and advocacy.

A leitmotif of this overview of landscapes and milestones on the road to Paris has been that the neoliberal project and its complicity in fomenting poverty, climate change and disaster risk and in otherwise holding back development has evaded scrutiny. This lacuna would seem to be something that development education is well placed to set right but the field has been less than forthcoming in critiquing the neoliberal agenda. John Hilary (2013) bemoans the tendency of British international development NGOs:

> "increasingly to distance themselves from any challenges to the power structures or ideologies that cause poverty, inequality and injustice whether at home or in the majority world' calculating that 'it is in their interests to work in active collaboration with the powerful – whether G8 governments or transnational corporations – in order to achieve tangible advocacy wins (however illusory) which can then be reported back to supporters as proof of continuing influence."

As we have noted, Bryan (2015) asks whether development education has been 'de-clawed' and stripped of its radical origins, whether it has become complicit in or is in contestation with dominant discourse. Elsewhere (2008) she calls, but largely looks in vain, for 'emancipatory knowledge' in the development curriculum; knowledge that engages 'more deeply and critically with structural causes of poverty', problematises different forms of development, and promotes otherwise imagining about development. We ourselves (Selby & Kagawa, 2011) have written of development education as having struck a 'Faustian bargain' with the

neoliberal agenda. Peadar Kirby (2012) notes the failure of mainstream education – and development education – to rise to the paradigm challenge accompanying the death throes of a model of development predicated upon cheap energy and the 'ever more intensive emission of greenhouse gases that are changing our climate in ominous ways'.

The formal state sector, Kirby asserts, 'has been battered into complete subservience to the dominant, neoliberal, commercial paradigm that is the fundamental cause of the crisis'. He might have added that those operating in international arenas conduct themselves as though similarly cowed and deferential! It is time for the development education sector to speak truth to power at all levels, local through global, by naming and interrogating the fundamental drivers of the climate change crisis and working with radical agendas and frameworks for transformation. Kirby makes the very valid observation that a reproduction framing of education, i.e. that it serves the purpose of replicating the dominant culture and development model, which now serves neoliberal purposes, is not a taken-for-granted. Educators can and have in the past successfully challenged dominant orthodoxies whether in challenging hegemonic religiosity with secularism or challenging speculation with scientism. Development education with its Freirean antecedents is well placed to challenge the dominant paradigm.

Third, development education needs to work through and articulate what 'development' looks like and connotes in an increasingly climate-challenged world.

One of us (Selby, 2010: 41) has argued that in the face of the multi-dimensional, runaway threat posed by climate change we should concern ourselves with 'education for sustainable contraction' rather than 'education for sustainable development'. 'If the contraction project is ultimately somewhat successful in mitigating global heating, the concept may eventually morph into the more steady state idea of 'education for sustainable moderation' (ibid.). An associated point is picked up by Kirby (2012), when he writes of the 'generalised instinct' to respond to the crisis we face as

temporary and with the 'presumption that things are going to return to a state of continuing improvement before too long'. For those who take the twin challenges of climate change and peak oil seriously, he asserts, 'what is urgently required is a far deeper paradigm change, to steady-state economy using far lower levels of energy and achieving low-carbon ways of producing and consuming goods and services'. He concludes: 'Development education is particularly challenged to rethink what development means in this new context and how to expand its horizons and become a space for debate and new thinking'.

What does development education on an inclined plane look like? By confronting this question development educators will be well positioned to lead the way in the multi-level exploration and enactment of alternative socioeconomic futures that is sorely required. In this regard, it will be important to promote child/youth and adult formal, informal and non-formal learning that explores in very concrete ways what no growth, de-growth and steady state economies and styles of living look like in practice. This would align with the aforementioned IPCC call for the 'exploration of a wide range of socioeconomic futures'. Steady state community projects that include alternative forms of exchange would be a very good thing to orchestrate, as would the facilitation of ideas exchange networks of such projects locally, provincially, nationally and globally.

Fourth, development education can set about challenging the blandness of the international response to climate change and climate change education.

Recognising that international agreements are the product of multiple bilateral and multilateral accommodations and compromises, development educators can look for and exploit avenues and opportunities to loosen the neoliberal stranglehold on what is discussed and determined and to steer decision makers away from the tokenistic in what is proposed. Take, for instance, the *Lima Declaration*, discussed earlier, and its encouragement to governments 'to include the issue of climate change in curricula'. With the exercise of subtle advocacy and canvassing, it should not be beyond the

bounds of possibility to help secure an acceptable but more muscular statement emerging from Paris, i.e. reading something like: 'to include climate change in its scientific, social, economic and moral aspects as a crosscutting issue in primary and secondary curricula'. Set against a backdrop of insistent articulation of the climate change threat, international decision makers, all of whom have a local base and constituency, can be influenced. We should not forget that they are not immune to the forces that are leading individuals and groups to the dawning realisation that paradigm shift is both necessary and inevitable.

Fifth, development education needs to take on board a range of new educational initiatives.

Beyond what has already been said about comprehensive climate change education and the need for climate justice education, we suggest having adult and youth and secondary age children critically examine corporate-backed disinformation campaigns, media treatment of climate change, the 'false balance' insisted upon by the media (in which *bona fide* scientists are given no more space than paid corporate-backed climate debunkers), and the contents of corporate-sponsored climate change materials that are infiltrating schools (Elshof, 2015). All this can happen under the heading of media literacy education.

We suggest, too, making disaster risk reduction education an important new sub-set of development education and conflating the field with climate change education, as the *Sendai Framework* proposes. Given the immediacy of the climate crisis, we propose giving special weighting to adult, community-based education and advocacy. In times of dire urgency, capacity building of adults for social and environmental justice engagement and leadership can be core to ensuring a future marked by social and environmental justice. In this regard we should not overlook the present, young adult 'jilted generation' denied the jobs, housing and pensions that their parents took for granted (Huckle & Wals, 2015: 502). They are lacking – but looking for - a cause and meaning in life and climate change action might offer a galvanising opportunity, bringing positive affirmation.

Sixth, the development education community should strain every sinew to bring its criticisms of UNFCCC climate change directions and proposals to every relevant arena and to every significant player in the few months that remain before Paris 2015.

Development education organisations and networks might hold workshops, roundtables, public meetings and the like and could put social media to good use. Of course, we should also join with those who, fired by intuitive certainty arising from what they notice around them or by scientific or social conviction, are taking to the streets ahead of Paris. In the upcoming months massive marches are planned around the world. If all pressure fails and more 'bland' is the outcome, it will be time post-Paris for redoubled and urgent resistance advocacy and education around alternative goals and visions for a better future.

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ADDRESSING THE CHALLENGES OF CLIMATE CHANGE: THE POTENTIAL ROLE OF DEVELOPMENT EDUCATION IN THE TERTIARY SECTOR

Mary Clarke Boyd and Therese Hume

Abstract: This paper explores the potential of placing development education (DE) principles at the core of all curricula, as a model to build local and global sustainable societies, as advocated by the National Strategy on Education for Sustainability in Ireland 2014-2020 (NSESI) (DES, 2014). A vision for change in education culture is required as the world enters the 'third industrial revolution' (Rifkin, 2011) with a view to sustaining life into the future within identified planetary boundaries (Rockstrom, 2015). Development education (DE) focuses on learning about and leading change. It also makes multiple, diverse and sometimes contradictory (Waldron, 2014) connections across disciplines. It adopts active and participative learning methodologies to achieve fairness in the distribution of wealth and power. As such, DE enhances critical analysis and reflection. It facilitates the development of participative and transformative skills for action and dialogue at cultural, social, political, ethical, economic and technological levels. It thus makes a strong contribution to understanding local and global development issues which are central to addressing climate change and educating for resilience.

Key words: Development education; climate change; education culture; sustainable societies.

The urgency and magnitude of problems created by climate change, coupled with the deep embeddedness of its causes, raises major issues for society, not least for educators. Despite attempts to date at prevention and mitigation, greenhouse gas emissions have continued to rise between 1970 and 2010 with the largest absolute decadal increases being towards the end of this period (IPCC, 2014: 5). The warmest year on record was 2014 and this year's temperature data would seem to indicate that these trends are

continuing (Blunden and Arndt, 2015). Hence, the European Environment Agency (EEA) has argued that:

> "the most fundamental shift in modern society in the 21st century will be to **reinvent** what it means to have a high level of societal well-being, while accepting and embracing the limits of the planet. Otherwise there is an increasing risk that breaching tipping points and moving beyond limits might bring more disruptive and unwelcome pushes towards societal change" (2015:169, emphasis added).

The urgency of change needed and exactly how this change might unfold is as yet undetermined and raises a major challenge for higher education institutions (HEIs). This is both in conducting the research necessary to reimagine and facilitate such a 'reinvention' and in fostering the abilities in individuals and communities to implement these visions.

This paper argues that, given the level of change needed at all levels in society to address (both in terms of climate mitigation and adaptation) the problem of climate change, that education as a whole and HEIs in particular, have distinct roles to play in facilitating the learning needed to address this crisis. Furthermore, it argues a role for DE as an existing 'inter-discipline', in providing models that have the potential to help seed the changes in HEI curricula needed to increase knowledge and awareness of climate change and of other challenges of (un)sustainability. Thus in Dewey's words, HEIs can act as resources to enable people to 'better anticipate what is going to happen that [they] can therefore get ready or prepare in advance so as to secure beneficial consequences and avert undesirable ones' (1961: 76).

The paper begins by drawing from the literature on DE and Education for Sustainable Development (ESD), examining the nature of broader learning capacities required to address complex problems of sustainability and unsustainability in HEIs (*in addition to* more traditional disciplinary skills). These ideas are further developed through a discussion of the potential role of HEIs in building resilience at personal and community

levels. Given the major thrust in current Irish higher educational policy towards rationalisation, the argument thus invites a *re-envisioning* of the role of HEIs as *regional* resources, contributing to the learning required to build resilient communities in addressing the challenges of climate change.

Development education as a model for trans- and inter-disciplinary learning

This paper concentrates on DE and ESD where elements of both disciplines are explored and the concepts involved in both are viewed as complementary and overlapping. DE crosses disciplinary boundaries, as is evident from the CONCORD (2004) definition of DE as:

> "an active learning process, founded on the values of solidarity, equality, inclusion and co-operation. It enables people to move from basic awareness of international development priorities and sustainable human development through understanding the causes and effects of global issues, to personal involvement and informed action. It fosters the full participation of all citizens in world-wide poverty eradication and the fight against exclusion. It seeks to influence more just and sustainable economic, social, environmental, and human rights based national and international policies".

Knowledge of climate change requires transdisciplinary approaches, where insights from a range of disciplines are applied to complex or 'wicked' problems (Conklin, 2005). These problems are characterised by large degrees of uncertainty and multiple perspectives. This complexity is apparent in relation to planetary health in the Anthropocene era (a contested concept where humankind causes some environmental degradation). Whitmee et al. advocate interdisciplinarity:

> "Planetary health, as a field straddling many uncoordinated disciplines demands investment and the development of a culture of interdisciplinary research. The health research community should forge links with the full range of relevant disciplines in the natural,

physical, and social sciences to understand complex systems and assess potential policy solutions" (2015: 45).

DE principles are central to the NSESDI (DES, 2014) which calls for education *for* sustainable living with total institution responses, interdisciplinarity and innovative pedagogies in formal and non-formal education scenarios. Building knowledge, developing skills and value systems for sustainability and equality are key aspects of change. These form a basis for building resiliency in society and constitute the basic tenets of DE and ESD.

NSESDI also calls for integrated education programmes resisting 'silo-isation' and with 'build-in' rather than 'bolt-on' approaches (DES, 2014: 21) with current examples in Dublin City University (DCU) and University College Cork (UCC). As educators of future leaders, professionals, and policy makers, HEIs have a key role to play in educating for sustainability. This gives rise to the need for the integration of political, socio-economic and environmental knowledge in all programmes.

Climate change and world development: What learning capacities are required for action?

Climate change can be viewed as the major symptom of a multi-faceted ecological crisis with social, political and economic dimensions. One of the biggest difficulties is that it emerges through a highly complex set of causes and conditions which are deeply embedded in complex systems of human behaviour and activities. Dominant in these is a reliance on fossil fuels and habits and lifestyles dependent on them. These, in many cases, also contribute to global inequalities. Addressing both climate change and related problems of global inequality thus requires action at many levels (individual, community, regional, national and global).

As far back as 1975, the first significant Declaration on Environmental Education, the Belgrade Charter, signified a clear need for a *holistic* approach to address environmental problems. The context for this was growing global inequality, hunger, poverty, illiteracy, class, racial and

gender exploitation and domination, all of which are core concerns of DE also. These are echoed in the United Nations Intergovernmental Panel for Climate Change *Summary for Policymakers* (IPCC, 2014: 5), where it is suggested that sustainable development and equity should provide a *basis* for assessing climate policy. In addition, it states that climate mitigation attempts should also address equity, justice and fairness. Climate change issues must not be addressed in isolation. They must be considered in the context of other societal goals, such as health, food security, biodiversity, local environmental quality, energy access, livelihoods and equitable sustainable development. This integrated approach maximises mutual benefits and avoids unwanted side-effects.

Studies of resilience to climate change also acknowledge the role of factors such as conflict in increasing the vulnerability of regions to climate-related problems. The positive effects of strong governance, civil and political rights, and sustainability literacy in building adaptive capacity are also noted by Brooks et al. (2004). There is therefore a strong case for mainstreaming aspects of DE in transdisciplinary spaces. This facilitates learners from different disciplines in building personal resilience and reflecting on both the implications of decisions or practices and the positive contributions that their disciplines can make in addressing serious and complex issues. Wals describes the need for this:

> "Our search for a more sustainable world requires cutting edge new thinking that can break the cycle of un-sustainable knowledge creation and transfer, un-sustainable technological development and unsustainable consumption patterns tied to un-sustainable economic principles … taking advantage of the privileged position universities have in our society and utilising some of the brightest minds on the planet in finding ways to preserve, rather than to destroy, the very same planet" (2006: 55).

Addressing issues such as climate change requires a view of relationships and interdependencies between economy, society and the

ecosystems which support them. This includes how different systems work and how different perspectives can be reconciled. These relationships or interdependencies can be understood *as the context* for a wide range of disciplines. A consultative study involving an international panel of 70 ESD experts identified a set of core competencies for ESD, (competencies defined here as preconditions for self-ordered action). These included systemic, anticipatory and critical thinking skills. Other cited skills involved communication, such as the ability to cooperate in heterogenous groups; capacities for participation, empathy and change of perspective; abilities for interdisciplinary work and communication through a range of media. Organisational skills, such as planning and realising innovative projects and the ability to evaluate these, were also included. Finally the capacities to deal with ambiguities, tolerate frustration and act fairly and ecologically were also noted (Rieckmann, 2012: 133). Definitions such as these (also see University Educators for Sustainable Development (UE4SD, 2014) provide useful bases for designing curricula. Given that the issue of academic freedom has been raised in attempts to drive sustainability-oriented curricula in higher education (Jones et al., 2010: Knight, 2005), it is salient to bear in mind that what is important here, as Kirby acknowledges:

> "is nurturing people's curiosity and critical insight so that they become powerful and wise change makers in their own right, not the 'correct' communication of some previously defined body of knowledge" (2012: 25).

The next section discusses in more detail the challenges posed by climate change for learners and communities. These challenges are raised by the levels of behavioural change required and DE literature is assessed for insights into learning *for* and not just about sustainability (DES, 2014). The potential role that can be played by HEIs in their regional communities and the possibilities posed by building on existing experiences of engaged or situated learning for both student and community are then discussed. The engagement mission of HEIs is highlighted, as cited in the National Strategy in Higher Education (Hunt, 2011).

Resilient learners and resilient communities

Douthwaite (2010: 1) has argued that, given the high level of societal and economic dependence on fossil fuels, moving beyond this dependence requires that systems of production and distribution and human relationships are changed out of all recognition. Such change is difficult for individuals to comprehend and even more difficult to apply in practice. In many instances the consequences of individual action (or inaction) may be located at a distance spatially – in other parts of the world, or temporally – affecting future generations. This raises questions of how best to incorporate these learning concepts for action into (higher) education settings.

In third level courses, oriented towards professional training, this raises the need for learners to critically reflect on the global and the inter-generational implications of decisions. The absence of such reflection is illustrated in a study by Reicher Newstadt (2015) on the attitude of secondary school learners in the US. The reasons for not worrying about climate change were found to be as follows: it is not local; it is happening somewhere else; it is happening in the future; it was not impacting on the learners but it was impacting on animals and the environment.

One possible explanation for this attitude is the concept of 'cognitive dissonance'. Klein (2014) cites the discomfort caused by the awareness that mundane activities could be destroying the planet, for example, driving to the supermarket and buying the ingredients for a meal. Such dissonance could also be engendered through, for example, knowledge of the undesirable conditions of production of items being purchased, for example the use of child labour. It is more comfortable not to know. Environmental educator David Selby thus identifies a range of deep psychological issues raised by climate change including: 'a presenting acceptance, often fulsome, of the severity of the looming crisis coupled with an ill-preparedness to follow through in terms of embracing and promoting the radical personal and societal change needed to stave off the worst effects of climate change' (2011: 2). In tandem with this acceptance is:

> "a form of self-deceptive or furtive denial characterized by fully conscious, or threshold of consciousness, **dissonance** between perception of problem and identified acted upon (or not acted upon) remedies, with profoundly unhealthy ramifications for both the individual concerned and society at large" (ibid: 2, emphasis added).

The serious discomfort raised by such dissonance, coupled with (related) broader societal and political inertia, results in an effective paralysis of the individual, even in the absence of ignorance or dissent. However, it is also important to note, and particularly within an educational setting, that the actions of individuals and communities in addressing issues such as climate change are also differentially circumscribed by contextual factors such as social and economic circumstances. For example, as Shove and Walker (2010) argue, individual social practices are shaped by elements such as practical know-how, meanings, infrastructures and socio-technical systems. Thus individual change might require social, political and infrastructural change and this is highly contingent on the circumstances of the individual and community.

Murphy et al. provide some possibilities for addressing these contradictions in a DE setting, through integrating cognitively-based compassion training (CBCT) with critical pedagogies employed in DE, noting that:

> "by cultivating compassion, individuals will develop a more sophisticated emotional literacy in duality with critical literacy which might impel them to intervene more rigorously for social change as a compassionate global citizen" (2014: 53).

The cultivation of mindfulness and compassion, based on the Dalai Lama's notion of a *secular* ethic (1999, 2011), views compassion as arising via an increased recognition of our common humanity and interdependence. This approach involves acknowledging vulnerability and building resilience at an individual level and relates to both the intrinsic and instrumental approaches to ESD. Intrinsic ESD is more concerned with broader educational aims such

as developing critical capacity in the individual. *Instrumental* ESD involves the promotion of informed, skilled behaviours and ways of thinking (Vare and Scott, 2007: 191). These, according to Sterling (2010), contribute to building 'resilient learners' who are also better placed to effectively engage in social learning processes (Glasser, 2007; Lundholm and Plummer, 2010). Thus, as acknowledged by Scott and Gough (see also Huckle, 2008):

> "ESD can helpfully be seen as an education in citizenship: a responsive social learning process which is a preparation for informed, open-minded, social engagement with the main existential issues of the day that can be experienced in the family, the community and workplace, indeed, in all aspects of lifelong learning" (2010: 3743).

Development of resilience in the learner as an individual, can also contribute to social learning within communities. This provides a further argument for an increased role for HEIs through their community engagement mission, building on existing work (e.g. DES, 2014; Ryan and Stritch, 2009) in facilitating opportunities for engaged and participative learning and research in their local communities. It also assists the development of active citizenship skills in learners. Quilley (2009: 49) argues for a combination of academic learning with the acquisition of practical skills for resilience, such as those advocated by movements such as the Transition Movement (Hopkins, 2008) and organisations such as Cultivate in Ireland. Here, community resilience is built through encouraging local food and energy production, relationship building, and skills development (Carnegie Trust, 2015). There is also potential for linking local challenges to global ones and reflection on how to 're-build local prosperity without ruining some other place' (Orr, 2004:164). The next section provides examples of how both individual and social learning skills have been developed in higher educational settings, through engaged learning experiences aimed at addressing multi-faceted and complex problems. It also provides an illustration of the characteristics of the learning spaces required and a series of examples to show what these spaces may look like in practice.

Learning spaces for building resilience

Designing learning experiences to develop a wide range of sustainability competencies, as discussed above, can be difficult in traditional educational settings. Enabling learners, trained in different disciplines to collaborate on multi-faceted problems, requires time and space. This is particularly so where it involves multiple stakeholders with differing perspectives, many possible outcomes and a high degree of uncertainty. This may be difficult to implement in the current tertiary sector. How to address needs for deep comprehensive learning as distinct from surface-based learning is influenced by the learning environment, course content and individual factors which influence motivation to understand and engage with the topic of study (Warburton, 2003). Deep learning can be inhibited by a strong disciplinary focus. In the UK, the Quality Assurance Agency for Higher Education (2014) recommends the use of case studies, stimulus activities, simulation, experiential project work and problem-based learning (PBL) as the best way of addressing sustainability literacy at third level in its guidelines for lecturers. This has the potential to provide what Barth et al. (2007: 418) term a 'new learning culture' which moves from the principle of indoctrination to one that is 'enabling-oriented, based on self-organisation and centred on competence'.

A case study from the University of Manchester (UM) on transformative learning for sustainability (TLfS), provides a particularly useful example of how learner-centred approaches and transdisciplinary knowledge creation on social, economic and environmental justice can be achieved (Dobson and Tomlinson, 2008). This PBL action research project involved year three undergraduates from a variety of courses in UM in the academic year 2009-2010. The aim of the project was to embed interdisciplinary experiential sustainability literacy for complex global issues in the curriculum, to lead to transformation for learners as agents of change. PBL was used to enable learners to view a problem from many perspectives, as outlined in the Business Environment Social and Technology (BEST) pyramid analogy of ESD for engineers and scientists (ibid: 269). The assumption taken by UM was that learners had a potential role as leaders and

managers of change in their future professional careers and would have to face resolving 'wicked' problems in their work lives.

Strict criteria for PBL project design in ESD in this case included: creating 'wicked problems' requiring a non-reductionist approach being topical unsolved projects rather than historic ones; projects that would effectively lead to knowledge about change processes and sustainable development (SD) by working across disciplinary boundaries; being age appropriate for undertaking by professionals; and being cumulative to form a coherent learning experience. Here, the learner was totally responsible for deciding, evaluating, presenting and reflecting on the problem to be solved. The design of the triggers or problem scenarios had to be adjusted in their degree of 'wickedness', to match the characteristics of the learner cohort and the institution itself. Such classroom-based studies provide rehearsals for messy realities where the parameters of 'wickedness' might not be so easily adjustable. They can also support, for example, the type of scenario setting proposed by planetary health advocates (Whitmee et al., 2015).

A second example, from the University of British Columbia (UBC), introduces community based and affective learning to the educational experience. This is achieved by adopting Transformative Sustainability Learning (TSL) objectives. These aim to balance cognitive, psychomotor and affective domains through community based action research with innovation, implementation and reflective learning objectives. TSL merges the fields of sustainability education and transformative learning together, acting as organising principles for cognitive (head), psychomotor (hand) and affective (heart) domains to shift education systems to contribute to a sustainable world and set standards for curricular reform.

There are two premises guiding this work. Firstly, that sustainability education must be situated in both the university and community environs and secondly, sustainability education must deconstruct all aspects of teaching and learning. Rationalistic and humanistic approaches to knowledge are required to address the weariness 'of curricula immunised

from the human condition and devoid of story, attachment and meaning' (Phelan, 2004, cited in Sipos, Battisti & Grimm, 2008: 70). The objective of integration of head, hand and heart methodologies is to impact on the behavioural domain also, as described by Hauenstein (1998, cited in Sipos, Battisti & Grimm, 2008: 74), which is one of the key challenges of transformative learning.

The approaches to learning that enabled inter/transdisciplinary, experiential and place-based sustainability and that the UBC found useful were: action learning; community service-learning, critical emancipatory pedagogy, environmental education, participatory action research, pedagogy for eco-justice and community, PBL and traditional ecological knowledge. Again, these are all dimensions of DE in different contexts. The value of the UBC case in this article, is that it shows the importance of community engagement and affective learning in bringing about real behavioural change. TSL and DE methodologies are closely aligned in terms of education for action.

The two cases above demonstrate how PBL and other TSL approaches can be used as learning strategies suitable for ESD and DE and also for integration into a wide range of curricula, leading to deeper learning and interconnectedness between disciplines. These provide a starting point to address the question posed by Warburton (2003), who asks how we might provide learners with the conceptual tools to move across disciplines and recognise patterns and causal relationships between economic, environmental and equity issues. However the question still remains concerning how these types of experiences can be best integrated into current tertiary sector in an environment which is still (in particular at undergraduate level) largely disciplinary-focused.

Seeds of change and the campus-community nexus

Integrating community-based, multidisciplinary engaged learning in HEIs requires a rethink of how learning and institutions of learning are structured, to reflect a more outward-looking social focus and provide a public resource

for learning. Several international initiatives, beginning with Talloires (1990) and more recently the People's Sustainability Treaty on Higher Education have contributed to this agenda. Signatory HEIs have committed to a series of actions, oriented 'towards societies that are fair, participatory, future facing and peaceful and able to restore the integrity of Earth's ecological systems, as well as promoting human development in an equitable and inclusive manner' (Copernicus Alliance, 2012: 2). A range of national and international support networks also exist. The most recent one comes via an EU-funded project to drive ESD in higher education – University Educators for Sustainable Development (UE4SD). This aims to provide training in key competences for educators through the development of an ESD academy to provide professional training in these (2014: 46). Moreover, 2015 has been designated as the European Year of Development (EYD) and is also the year when the Sustainability Development Goals (SDGs) will be formulated to set the development policy agenda to 2030. Moreover, the Conference of the Party, Meeting 21 (COP21) of the United Nations Foundation Convention on Climate Change (NFCCC) is taking place in Paris in December 2015 adding to an important year for global development policy and practice.

The above initiatives and events emphasise the absolute urgency of addressing climate change. This urgency is reflected, for example, in an increased focus by political and religious communities (for example Pope Francis, 2015) and a recent breakthrough case in the Hague District Court (Urgenda Foundation v The State of the Netherlands, 2015), requesting state action on climate change as a human right to protect citizens. They underpin the need for a strong knowledge base for learners regarding the multi-layered dimensions of climate change. These range from basic mechanics to the broad range of skills needed for sustained action, including those needed in potential roles as change agents at different levels, and the basic tenets of professional, civic and community responsibility.

In Ireland, the NSESDI (DES, 2014), as mentioned above, was eventually published, after a long delay (Liddy, 2009), at the end of the

United Nations Decade for Education for Sustainable Development (UNDESD). It includes: recommendations for an extension of existing green campus and sustainable transport programmes; the creation of more undergraduate programmes relevant to sustainable development; the embedding of sustainability principles into existing disciplines; and increased research funding and collaborations in the area (DES, 2014: 21-23, 30, 43). Many recommendations regard the establishment of reporting mechanisms in this area as priority and to provide some research foundation to monitor future activity and generate specific baseline data. These are indicative of how little work has been done at a policy level in this area to date. Indeed, the strategy document acknowledges that 'the obstacles to effective ESD are significant' and that the 'scale of the task should not be underestimated' (ibid: 37).

However, despite this lack of data, the NSESDI acknowledges that much work in ESD already exists, and at third level, a number of development education initiatives have been instrumental in these. Integration of development into the education of social professionals, for example, social care workers, youth workers, child care workers, early childhood educators, and others is advocated (DES, 2014). This is at present reflected in: the Development and Inter-Cultural Education (DICE) programme supporting primary teacher education; the Ubuntu initiative embedding DE in initial teacher training in Ireland; and Teachers in Developing and Learning (TIDAL) in Northern Ireland. The Institute of Technology Sligo (IT Sligo) has mainstreamed a number of modules in undergraduate degrees in Social Care Practice and Early Childhood Care and Education, and has also established a student-led Happy Planet One World Society (HPOWS) which provides a focus for integrative work between learners, campus, and local and international community networks. HPOWS aids learner engagement outside the classroom, across campus and with communities in the north-west of Ireland. It currently benefits from the support of Campus Engage and IT Sligo Clubs' and Societies' funding.

These developments were initially funded by Irish Aid. This demonstrates how seed funding, in tandem with the ongoing support of national networks, can effectively spur and support longer term change within HEIs and by extension, the broader community. Sustainability and resiliency studies underpin models of practice in the social professions where community development and specific regional responses are considered as part of curricula. Working with Nature, is another module integrated into social science courses where learners focus on learning for sustainability in an open air classroom. This is located adjacent to IT Sligo campus' organic garden, which was set up as a resource for staff and students with the aid of the College and the Health Service Executive.

The 2011 National Strategy for Higher Education did not mention sustainability, although a starting point was made through a commitment to community engagement. This has since been underpinned by strengthening a national 'Campus Engage' network and the drafting of a National Charter on Community engagement, signed by 20 presidents of HEIs. Campus Engage aims to promote and support engaged, community-based learning and research within higher education, in addition to student volunteerism and to share best practice via a wide range of case studies on their website. These include community gardening in Galway (National University of Ireland Galway, (NUIG)) and Dublin (Dublin City University, (DCU)) to nursing in Africa (NUIG). Initiatives such as these provide the basis of an infrastructure for HEI partnerships with local and global communities (Campus Engage, 2015). Despite these positive examples, the broad thrust of higher education policy over the past few years however, has been on rationalisation of the sector and the need for HEIs to survive with reduced funding in an increasingly competitive environment. This does not leave much space for the broader processes of research and learning that are needed to address problems such as climate change education.

Conclusions

Addressing climate change needs much more than a series of technological fixes, though these are also necessary requirements. Creating the capacity to

address and adapt to climate change involves building resilience in individuals and communities, locally and globally. This requires more innovative pedagogies; input from many disciplines; engaged and action-orientated learning; and changes needed in educational structures and cultures to enable these. Climate change provides a stark and urgent reminder of the need to address problems of 'actually existing unsustainability' (Barry, 2012) including the deep global inequities, which characterise ecological and development crises.

This paper has argued that education at all levels, and particularly at higher level should play a key role in addressing existing and emerging ecological and socio-economic challenges. In this context, it has been proposed that insights from DE can be adopted in designing and creating inter and transdisciplinary learning spaces, thereby providing the knowledge, skills and value systems required for dialogue and action. Enabling the development of spaces for engaged transdisciplinary learning will require research and consequent reform. Curricular reform, in particular will be required to create this space, in addition to further development of the engagement mission of HEIs to strengthen the HEI/community interface.

Despite the magnitude of change needed and the fact that change is slow, many examples exist where innovative actors have engendered positive change aided by supportive networks and in some cases policy change. Examples provided in this paper of existing networks and initiatives demonstrate some of these possibilities. Although the NSESDI was published relatively late, in the final year of the UNDESD (2014), it provides a starting point for the more integrated focus required to address climate change education in Ireland. As such, it will hopefully provide an impetus for the transformation in Irish education needed to contribute to future climate stability.

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THE RELATIONSHIP BETWEEN CHILDREN'S PERCEPTIONS OF THE NATURAL ENVIRONMENT AND SOLVING ENVIRONMENTAL PROBLEMS

Sarah O'Malley

Abstract: The capacity of environmental education to solve the ecological crises by producing an environmentally sustainable society is uncertain. The marginalisation of environmental education (EE) in mainstream education, its precarious position within broader concepts of (environmental) sustainability and the lack of critical evaluation of current practices finds it characterised by anecdotal narratives. It is claimed that modernisation is leading to children's growing (dis)connect with the natural environment and is bringing additional responsibility to the relationship between society and the natural environment. This article adds to the discussion around understanding how children interpret the natural environment through an in-depth examination of the dynamic relationships between EE, development education (DE) and education for sustainable development (ESD). As the consequences of climate change are of increasing concern worldwide so too is the need to equip society with the necessary skills to address the issues involved. How and to what extent children interpret or relate to those issues is crucial to the overall environmental sustainability process.

Key words: Environmental education; education for sustainable development; children; natural environment.

This article seeks to add to the discussion around understanding how children interpret the natural environment by providing empirical evidence as to the complexities that underpin interpretations of the natural environment and its associated problems. The environmental and social consequences of climate change are of increasing concern worldwide. While the debates on climate change continue to be fraught with procrastination and inaction, the negative aspects of human actions on the biophysical environment becomes more evident week by week. Global warming, the diminishing of natural resources

and the extinction of biodiversity all reflect the unsustainable patterns of (over)development, production, and consumption (Hynes, 2014; IPCC, 2014a). There are concerns that children, the future policymakers and key civic leaders, lack (or have lost) important outdoor experiences and are ill-equipped to develop the necessary skills to prevent further environmental damage (Kahn and Kellert, 2002; Malone, 2007; Saylan and Blumstein, 2011). Closely aligned to the aims values and outcomes of DE, EE seeks to address global environmental issues through informal and formal education. DE plays a key role in developing knowledge of global environmental issues through active, inclusive, participatory learning and teaching processes (Department of Foreign Affairs, 2006: 12). Considering the ecological crisis shows no sign of abating there are questions to be asked regarding the expectations of DE and EE to solve environmental problems.

Much of the existing EE literature focuses on how changes in the physical landscape, including (sub)urbanisation has altered the relationship between children and the natural environment. Publications deal with the various aspects of children's contact with the outdoors to enhance their experiences through an EE initiative or the promotion of EE in schools (Elliot, 1999; Francis et al., 2013; Lindemann–Matthies, 2005; RSPB, 2013). This is often accompanied by a variety of new initiatives that emphasise effective communication between individuals, the community, and school environment to promote EE efforts overall (Cornell, 1998; Kellert, 2002; Louv, 2005; Sobel, 2008). Though a broad range of EE studies exist, the lack of diversification and prevailing quantitative evidence has led to fragmentation and repetition in the field and more cognisance needs to be taken of children's actual experiences.

In Ireland, ambiguity exists between EE and other types of education such as education for sustainable development (ESD) and DE (Hogan and Tormey, 2008; O'Malley, 2014). This article draws upon the findings of empirical research carried out as part of a PhD thesis on a sociological study of EE in Ireland. Despite the dominant arguments that children are disconnected from the natural environment, children who were

interviewed were found to be environmentally knowledgeable, portrayed a sense of attachment and were informed as to the implications of pollution and mismanagement of wider habitats and ecosystems. On the other hand, analysis found EE efforts to be underpinned by two conflicting conceptual strands. Strand 1 prioritises experiential humanistic approaches advocates a socially critical approach to values and beliefs about the natural environment. Strand 2 promotes rational educational approaches that emphasise the management of this relationship in order to solve environmental problems. It concentrates on the transfer of knowledge from teacher to learner, desired educational outcomes and is more often delivered indoors. Recent contributions state that EE has failed in terms of changing behaviours 'to stave off the detrimental effects of climate change' (Saylan and Blumstein, 2011: 1). This paper argues that the notion of 'the environment' reflected in EE has consequences for DE and is crucial to understanding the type of relationship that is promoted between children and the natural environment. What is unclear within the context of climate change is whether both DE and EE equip society with the necessary skills and knowledge to address the urgent need for sustainability. The article highlights that real gaps and problems are emerging not because current educational approaches have failed but because people connect with the natural environment very differently. A truly reflective multi-disciplinary approach to teaching (and indeed learning) about our natural environment is of critical importance at this juncture.

Development education, environmental education and human-environment relations

Climate change is not only a threat to the environment but to global security and economic prosperity. Evidence suggests that developing countries, already struggling with social, economic and environmental issues, will suffer most from greater weather extremes and increasing incidences of droughts and floods (UNICEF, 2012: 2). The growing body of scientific publications that assess the impact and vulnerability of climate change doubled between 2005 and 2010 (IPCC, 2014b: 4). The focus on adaptation also suggests that climate change has set in motion a rewriting of our

connection with the biophysical world overall (Fox, 2014: 104). In the last few decades, climate change and environmental education (CCEE) and ESD have become major tools for protecting the environment and ensuring sustainable development (UNICEF, 2012: 3). DE seeks to develop strategies to increase teachers' understanding of the social aspects of climate change and provide the framework for a child-centred participatory approach to environmental awareness and nature that can be incorporated into the design and operation of the school curriculum.

Although coming from different perspectives – DE addressing issues of human injustices and inequality while EE focused on solving environmental problems – both share common characteristics. DE and EE emerged from different traditions with ESD drawing 'significantly from the prior work of both' (Hogan and Tormey, 2008: 5). ESD emphasises the need to 'change personal/individual and social relations to the local and global ecosystems' as well as behaviours around consumption and production (Wade and Parker, 2009: 6). Firstly, they both promote the development of knowledge and skills to promote sustainable actions within society. Secondly, they are said to be multidisciplinary and to occur in both formal and informal educational contexts. Yet, it was more often the case that DE work did not emphasise the importance of environmental sustainability, and that EE practitioners often neglected global development and injustices (Hogan and Tormey, 2008: 5). Many argue that EE does not address global environmental issues or 'offset the severity of environmental degradation and serious problems associated with human reproductivity' (Hungerford and Volk, 1990: 15). However, the concepts do overlap as 'global poverty could not be considered in isolation of the environment and vice versa' (ibid: 14).

Many refer to the biological and emotional dimensions when trying to capture learners' relationship with the natural world in modern, developed societies, and their potential impact on society – environment relations more generally. Edward O. Wilson (1984), for example, pays particular attention to biological primers of humans' relationship with nature. He coined the biophilia hypothesis to describe humans' innate 'urge to affiliate with other

forms of life' (cited in Kahn and Kellert, 2002: 1). He later (1993) lists the possible emotions on encountering natural things as 'attraction to aversion, from awe to indifference, [and] from peacefulness to fear-driven anxiety' (cited in Verbeek and Frans, 2002: 1). The scientific perspective suggests that given the opportunity to access, interact with or observe the outdoors, people instinctively feel an emotional and psychological bond. This paper acknowledges the importance of this argument for environmental conservation and wider sustainability debates. However, if our connection with the natural environment is innate why is there an ecological crisis? The hypothesis focuses on a particular perception of what a connection ought to be and must 'extend beyond its genetic base' to include the influence of social and cultural factors in shaping people's relationship with the natural world (Kahn, 1997: 20).

The argument that culture and society play a key role in shaping people's relationship with the natural world is not new. Social sciences take the position that cultures define our positions towards the natural world. American anthropologist Clifford Geertz (1966: 7), for example, states that 'there is no such thing as a human nature independent of culture' rather both are intertwined. Children also learn and develop their attitudes toward the natural environment through socialisation processes. However, until recently, traditional views of the socialisation processes viewed children as playing a passive role within the context of their families and communities (Corcoran et al., 2009). The view that children are passive recipients of socialisation processes is criticised yet research continues to develop pedagogical approaches without understanding children's experiences (Nagel, 2004). Recent studies find that children are in fact active agents in 'creating their own cultures and life world' (Corcoran et al., 2009: 52). Children have expectations as to the structure and purpose of their psychical environment to enable exploration and creativity. Personal, social and physical development is closely linked to children's appropriation of a landscape and sense of belonging to it (ibid: 38). How culture and society shape the relationship addresses current gaps in social scientific research on the nature of children's connection with the natural environment.

Environmental education: A critical review

The majority of EE definitions adopt a tone that often marginalises any non-cognitive connections with the natural environment, including people's attachment to a particular landscape or view that shapes their sense of place, or any emotional connection (Stapp et al., 1969; UNESCO, 1977; WCED, 1987). More recent definitions of EE are closely linked to education for sustainability and/or ESD. The merging of EE with broader sustainability concepts is further evident in *Agenda 21*, an action programme devised at the United Nations Conference on Environment and Development (1992), otherwise known as the Rio Summit. EE plays a prominent role here in promoting and implementing ESD. The linear models and the amalgamation with emerging concepts of sustainable development and ESD had the effect of undermining instead of establishing EE, its role within formal education and the global environmental context. Indeed, the overall concept of sustainable development has received some criticism with academics and researchers taking issue with the notion of overcoming the ecological crisis with sustained economic growth focused on additional development, production and consumption. Some, for example, point to an over-reliance on the power of technology, while others still focus attention on the disparity between the rich global North and the poorer developing nations of the South (for a good critique of such criticism see Lippert, 2004). The absence of an empathetic relationship with the natural environment in definitions is in direct conflict to arguments in contemporary debate that emphasise the importance of holistic and experiential education (eftec, 2011; Loughland et al., 2003; Louv, 2005; Ofsted, 2008; RSPB, 2013).

Conceptual investigations are not part of research, with few researchers addressing conceptual tensions or the diverse understandings of dominant concepts such as 'the environment' and 'nature' from the perspective of the learner (Bonnett and Williams, 1998; Department of Foreign Affairs, 2006; Hogan and Tormey, 2008; Rickinson, 2001: 275; Van Wieren and Kellert, 2013: 262; Wade, 2008). EE research routinely refers to concepts of nature, the environment, the natural world, biodiversity, physical environment, and the outdoors, which coexist alongside each other creating

an overwhelming array of terminology and meanings. There are studies that investigate how young people conceptualise the environment (Loughland et al., 2003) or nature (Bonnett, 2007; Schultz, 2001), but a critical examination of the concepts of the natural environment overall or how learners perceive the natural world is minimal.

There is confusion as to whether different types of EE exist and to what extent concepts differ inside or outside formal education. Being firmly embedded in the formal education system, EE is thus believed to be in a good position to promote, from an early age, the adoption of long-term environmental attitudes, behaviours, and active participation with environmental issues. Similarly, the majority of research continues to focus on formal education as the primary avenue for dissemination (eftec, 2011; Natural England, 2010; Ofsted, 2008; Play England, 2008). However, a conflict exists as EE is understood to contradict the dominant functions of education. It encourages learners to be active thinkers yet within formal education learners are 'recipient of other people's knowledge and thinking' (Stevenson, 2007: 143, 147). This somewhat troublesome relationship causes problems for EE as 'it does not fit neatly into any traditional subject areas', leaving it vulnerable to marginalisation (Gough and Gough, 2010: 339). The purpose of education is one of on-going contested debates with many criticising its preoccupation with compartmentalisation and intellect (Blewitt, 2010: 3469; Moore, 1982; Robinson, 2008: 13; Share et al., 2007; Sterling, 2001: 25; Stevenson, 2007: 114). In contrast, EE also focuses on developing a sense of place or belonging to the natural environment through firsthand experiences outdoors, with no specific educational outcomes in mind. It is argued that these two processes are diametrically opposed and conceptual confusion prevails in the EE sector which hampers more concerted efforts to address and potentially improve its overall effectiveness.

Empirical research in the Republic of Ireland context

Referring to empirical research on EE from the Republic of Ireland context, two types of environmental messages transfer to the learner and how it impacts on DE thinking. The research carried out consisted of qualitative

data of 47 semi-structured interviews with environmental educators (n = 18), school staff (n = 11), and families (parents and their children) (n = 18). Participation was voluntary and all interviews occurred face-to-face. The interviews were semi-structured in approach to ensure comparability between interviewee groupings but, at the same time, gave each interviewee the opportunity to raise any issues that were particularly relevant to them. The aim of the research was to theoretically explore and empirically investigate the underpinning concepts of EE provision in Ireland and to what extent they (re)connect children with the natural environment.

The questions focused on the purpose of EE, educational outcomes (if any), and its degree of flexibility within formal education. This provided the opportunity to investigate generational differences (if any) regarding children's relationship with the natural environment, the influence of wider societal, economic, and political developments and the role of EE within that context. Eleven semi-structured interviews were conducted with teaching staff from six primary schools within the Galway region. The classification of schools followed a number of headings including, region (rural/urban/city centre) and socioeconomic profile of pupils (Galway City Development Board, 2009). One island school, off the west coast of Ireland, was chosen for a comparative analysis. Fieldwork also included semi-structured interviews with children up to fourteen years of age, and their parent(s) who were recruited through each primary school. To encourage participation, an information flyer promoting the project was distributed to school staff. The views of children and of their parents regarding education, EE, and their relationship with the natural environment were crucial to understanding the learners' perceptions of the relevancy and (in)effectiveness of EE. The outcomes from this research demonstrate that natural environment concepts that underpin effective EE do not fully deal with central environmental issues and could develop a sense of helplessness instead of empowerment towards the ecological crises overall.

The children interviewed were found to be environmentally informed, knowledgeable and portrayed a sense of attachment with their

natural surroundings. The majority understood the implications of pollution and mismanagement of wider habitats and ecosystems. However, a balance between rational and humanistic approaches in EE is required to develop the intimate relationship further and emphasise the social, economic, and environmental benefits that underpin it. The dominance of a purposive concept of EE overlooks the benefits of regular experiential education outdoors. Some, for example, referred to 'Fair Trade' and 'organic' products in the home and associations with sustainable environmental behaviours. As the child is of a primary school age, the trademark recognition is impressive as it connects a subtle analogy that consuming a particular product is good for the environment. However, one might question how the ideology behind Fair Trade influences a long-term empathetic relationship between a child and his/her natural surroundings. One boy, when asked about the benefits of Fair Trade, associated eating the produce with doing something positive for the natural environment, 'Ya and you can eat it and that's Fair Trade!' That is not to say that certain programmes ignore that aspect, but feedback from the majority of children suggests that responsible resource management *is* EE. There is a certain disregard for holistic EE which is child-centred as emphasis is placed on solving global environmental problems whose 'steps' are more suited to the structure of the education system. Children enjoy EE and the different educational experiences provided, but considering the ecological crises a more inclusive standard of EE is necessary.

On the other hand, children showed ingenuity and enjoyment when discussing what they did outside of the formal education system. Many spoke about building forts, climbing trees or taking part in activities with friends. One child when asked if he liked playing outside, simply said 'Ya' and when asked why; 'because it's more fun outside'. Another identified the outdoors as fun, enjoyment, exploration and an opportunity to play Star Wars. The outdoors offers a blank canvas for a curious and imaginative mind, a source of adventure and play.

> "[W]e play in trees we have trees around the side there we go down the field down the back we go swimming we play on the trampoline em I play soccer and we play like Star Wars."

There were differences in the size of areas to roam and access to the natural environment as described by children. However, once outdoors how they respond in the particular space is essentially the same. The majority of children living in (sub)urban areas or housing estates, for example, described their favourite garden animal and what it eats, with some distinctions, for example, seasonal visitors such as lapwings. Children living on the rural island to a certain extent have a larger repertoire of animals as sea birds, dolphins and seals were part of their immediate natural surroundings. Some children in other rural areas felt a sense of ownership, for example naming a rocky island close to the house 'Tracey Island' from Thunderbirds and then 'Death Star' from the movie Star Wars. Children in more built up areas revealed a sense of attachment to special places such as a hideout, den or fort in the garden for recreation or the opportunity to be alone. The children living on the rural island explore a wider area, for example, a woodland and climbing a large hill that is very much outside of the 'garden parameter' of more urban areas. This relationship reveals significant evidence as to the construct of a connection in children's social and cultural frameworks and resourcefulness irrespective of the increase of physical or social barriers in recent decades (Corcoran et al., 2009; Linzmayer and Halpenny, 2013).

Discourse surrounding children's growing (dis)connection from the natural environment is deeply rooted in EE research and practices. What is regarded as effective EE is subjective and the 'connection' provisions seek to build between children and their natural surroundings is inherently complex. This is useful to DE research as it illustrates how provisions are underpinned by differing educational approaches and concepts of the natural environment that are at times diametrically opposed in meaning. This raises questions regarding the expectations of DE and EE to solve environmental problems when a critical understanding of what a (dis)connection is and an underestimation of children's ability to engage with and connect with the

natural world are absent. To what extent does the current climate change narrative facilitate or enhance children's relationship with their natural surroundings?

Conclusion

Compared to adults, children are among those most susceptible to the negative effects of environmental harm and more vulnerable to conditions such as poor air quality, contaminated water supply, and extreme heat. But children should not be considered passive or helpless victims of such conditions. They are powerful agents of change and education is one of the best ways of strengthening community resilience and providing pathways to negate the worst effects of climate change. 'Effective' approaches to EE closely resemble a concept of continuous development whereby environmental resources and problems are managed through rational educational paradigms. This does not challenge environmental values and beliefs but rather monitors behaviours that justify current trends of environmental consumption and economic growth. In fact certain provisions clearly identify with 'green consumerism' and enhance children's ability to recognise environmentally friendly produce, for example, an organic vegetable garden or Fair Trade produce. This does not fully deal with that central (environmental) issue and could develop a sense of helplessness instead of empowerment towards the ecological crises. On the other hand, the more holistic approaches to EE did not address this gap and were not recognised by the children as educational. This is possibly due to the experiential format not making a clear statement in the same way more formal structured programmes associated with global environmental issues. This suggests that experiential programmes are not clearly defined and are open to interpretation by the participants. This leads to an enjoyable educational experience that often leaves the perception of a nice day out. The inconsistency of experiential programmes in comparison to more effective rational approaches leaves it marginalised and largely ineffective as an educational resource for students. What we take from this paper has consequences for DE understanding. It suggests that children identifying the natural environment as a problem to solve can have the effect that children

follow a popular or organised concept rather than thinking for themselves. This sheds new light on how children socially construct notions of the natural environment, how their perceptions can be influenced by broader social, cultural and economic dimensions and, importantly, the role this plays in the overall environmental sustainability process.

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Perspectives

INDIGENISING AFRICA'S ENVIRONMENTAL EDUCATION THROUGH A DEVELOPMENT EDUCATION DISCOURSE FOR COMBATING CLIMATE CHANGE

Simon Eten

Abstract: Africa is one of the regions that bear the harshest effects of climate change, yet its efforts to combat climate change through environmental education are not strongly linked to its ecological conditions. The encounter of Africa with colonialism in the past and the current impacts of globalisation and neoliberalism have kept African indigenous knowledge in the margins of its educational systems, thereby impeding its environmental education efforts for effective climate change adaptation. This paper presents the argument that, a development education discourse on indigenous knowledge in the lens of critical theories of education such as critical pedagogy and postcolonial theory can create spaces for the revitalisation and inclusion of indigenous knowledge in African educational systems for combating climate change. Based on a literature analysis of papers by some African postcolonial scholars, the author weaves the usefulness of African indigenous knowledge into a development education discourse, not only for combating climate change, but also for challenging hegemonic knowledge forms.

Key words: Development education; indigenous knowledge; environmental education; education for sustainable development.

Several assessment reports published over the years by the United Nations (UN) Intergovernmental Panel on Climate Change (IPCC) have not only confirmed the reality of climate change, but have also underscored the importance of incorporating indigenous knowledge (IK) into climate action (Downing et al., 1997; McNamara and Westoby, 2011). The incorporation of IK into climate action is said to be useful in developing 'effective adaptation

strategies that are cost-effective, participatory and sustainable' (Boko et al., 2007: 456). For African countries, the need to combat climate change is particularly urgent given the peculiarity of Africa's climate change situation. Though the least contributor to the anthropogenic causes of global climatic changes, Africa bears the harshest brunt of climate change (Hope, 2009a, 2009b) and is poorly represented in global efforts to combat climate change as evidenced for example in the small number of African scientists on the IPCC (Masters, 2011). Climate change poses a serious threat to Africa's sustainable economic development and if not combated, risks derailing the socio-economic gains already made by African countries (Hope, 2009a).

Climate change policies and programmes are mostly framed as mitigation and adaptation strategies (Kpadonou, Adégbola and Tovignan, 2012), with some as educational strategies that aim to change 'lifestyle, economies and social structures' that contribute to excessive production of greenhouse gases, and also equip people and communities with the appropriate knowledge and skills to adapt their lifestyles and livelihoods to the impact of climate change (Anderson, 2010: 4). Human activities have been found to contribute significantly to climate change (IPCC, 2013), and education as a tool for social change has a vital role to play in not only changing behaviours that contribute to climate change, but also in instilling adaptive knowledge and skills towards the accommodation of climate change impacts. Combating climate change is part of a broader global sustainable development agenda (Sathaye, Shukla and Ravindranath, 2006), as can be seen in the inclusion of a climate change goal in the proposed UN Sustainable Development Goals (SDGs) due to be adopted in September 2015 (Picot and Moss, 2014). For climate-related education programmes to be successful in creating a climate-aware citizenry in any society, the indigenous forms of knowledge based on the lived experiences and local ecological conditions of such a society must be incorporated into such programmes (Wiid and Ziervogel, 2012). This important indigenous perspective to environmental education (EE) is notably missing in most African countries, due to the de-contextualised nature of educational policies and programmes, traceable to Africa's past experience with colonial

domination (Kayira, 2015), the result of which has been the marginalisation of African IK in contemporary educational policies and programmes (Shizha, 2013).

This paper presents the argument that a development education (DE) discourse around EE in some African states can provide opportunities for indigenising school curriculum content for combating climate change. With its transformative potentials and theoretical roots in Freirean critical pedagogy and postcolonial theory, DE can provide a critical discursive framework within which assumptions held about African IK can be examined and challenged while also providing a narrative to understand and address the marginalisation and subjugation of IK the world over, and in African educational systems. The paper will first discuss the evolution of the Environmental Education Movement (EEM) in relation to DE, and the linkages that exist between these concepts. The second section will delve into a theoretical discussion of how IK is manifested in DE discourse in relation to critical pedagogy and postcolonial theory. This is followed by a discussion of IK and its importance in climate change adaptation practices in African communities and further touches on some global and regional policy initiatives that promote IK in development processes. The last section discusses the de-contextualised nature of Africa's education, while citing some efforts to revitalise indigenous knowledge in the school curricula in some African states. Challenges that hamper the integration of IK into African school curricula are examined too.

The evolution of an environmental education movement vis-à-vis development education

The EEM has been at the forefront of global and national educational efforts since the 1960s in creating awareness on what the environment is and how humans should relate to it in order to safeguard it. In one of the earliest international symposia, the 1970 Nevada workshop, EE was defined as 'the process which leads to the development of abilities and attitudes necessary to make people comprehend and appreciate the relationship between them, their culture and the biophysical environment' (Skanavis and Sarri, 2004: 271).

The first intergovernmental conference on EE was later held in 1977 in Tbilisi, Georgia, USSR, and ended with guidelines and recommendations for the wider implementation of EE in formal, informal and non-formal education settings across different countries (Hogan and Tormey, 2008; Palmer, 2008). This has seen the implementation of school-based and community-based environmental education programmes in both developed and developing countries. Though discussions on EE in the above cited conferences, among others, established a link between the human environment and social and economic development, the practice of EE over the years has focused more on the protection of the human environment, thereby giving it a more environmental outlook (Hogan and Tormey, 2008).

DE as an area of learning has evolved over the years in its aims, especially in Europe, from educating people about global development issues to challenging conceptions of power, justice and fairness in efforts to focus global attention on the impact of development efforts by countries in the global North in the global South, but also to educate people in developing countries about issues of human rights, self-reliance and social justice. Though DE practitioners focused their efforts more on the social and economic dimensions of development in its early days, with time it became apparent that the social and economic wellbeing of people required the preservation of the environment, calling for the incorporation of environmental issues in DE (Tilbury, 1997). DE and the EEM have enjoyed some collaboration in promoting sustainable development (SD), though sometimes this relationship has been characterised by tension and competition (Dolan, 2012; Hogan and Tormey, 2008). DE an EE have interacted as complementary disciplines, driving global discussions on education for sustainability that is aimed at the promotion of social and ecological justice, the results of which for example, culminated in the 2005 declaration of Education for Sustainable Development (Atkinson and Wade, 2012; Bourn, 2005; Tilbury, 1997).

Global development issues such as climate change, natural resource depletion, environmental degradation and poverty, among others, are at the

centre of discussions in the two educational approaches of DE and EE. In other instances however, DE and EE have competed over space and legitimacy in driving the global agenda of education for sustainable development, a difference mainly expressed in emphasis on either environmental issues or social and economic issues (Hogan and Tormey, 2008). Within the EEM, the concept of ESD emerged in the 1980s amid global concerns and discussions around environmental protection and SD. ESD has been widely promoted in recent times, and has become a buzzword in global discussions on educational policies and programmes geared towards promoting SD, and later given significant impetus by the launch of the UN Decade for ESD in 2005 (2005-2014). The decade for ESD was to see to the integration of 'the principles, values and practices of sustainable development into all aspects of education and learning, and to encourage changes in behaviours that allow for a more sustainable and just society for all' (UNESCO, 2012: 5). ESD is said to have emerged to improve and strengthen EE, and to deal with issues of inequality, social justice, sustainability and North-South relationships, among other global development issues, which hitherto were missing in EE programmes in countries across the globe (Blum et al., 2013; Jickling and Wals, 2008). For this reason, ESD is thought to be a more all-encompassing educational approach to dealing with climate change and other SD issues.

The declared aims of ESD notwithstanding, there are those who see the shift from EE towards ESD as an attempt to homogenise EE across different countries, and warn that this move holds the risk of eventually reducing 'the conceptual space for self-determination, autonomy, and alternative ways of thinking' (Jickling and Wals, 2008: 4) around dealing with issues of environmental challenges. ESD has also been cited for being complicit with neoliberal economic growth that contributes to deepening inequality, poverty and environmental denudation, as well as advancing a neoliberal educational agenda that carries globalising forces and neocolonial tendencies (Selby and Kagawa, 2011). In light of the criticisms levelled against EE for its narrow focus on environmental issues and, latterly, of ESD for harbouring globalising and neocolonial tendencies, DE as an educational

practice could play an important role in addressing these shortcomings, given its roots in approaches informed by critical and postcolonial theories. But DE also has to collaborate more closely with EE and ESD in order to strike a balance between the pursuit of social and economic justice on the one hand, and environmental sustainability on the other (Hogan and Tormey, 2008).

Though many African states have committed themselves to ESD principles, and are incorporating these principles into their educational policies and programmes (UNEP, 2008), the term EE as a descriptor for educational policies and programmes aimed at addressing environmental challenges generally and climate change in particular, still dominate the narratives of environmental protection in the school curricula of some African countries. With regards to the conceptions and practice of DE in some African states, as for example in Ghana, DE is narrowly limited to citizenship education with a specific focus on promoting citizens' support for public institutions and policies, and therefore lacks in Freirean critical dimensions that empower citizens to be critical agents of change (Eten, 2015). The introduction of Freirean critical approaches of DE into existing DE and EE practices in some African countries therefore holds the prospect of strengthening these practices for SD.

Indigenous knowledge in development education discourse

DE's educational practice offers learning frameworks that question dominant paradigms and narratives of development that are disempowering and marginalising, particularly in the global South, and is motivated and driven by principles such as equality, justice, respect, inclusion and solidarity (Skinner et al., 2013). DE has its theoretical foundations in the ideas of Paulo Freire (1970) and is anchored in and guided by critical theories of education such as critical pedagogy and postcolonial theory. These critical theories within a discourse of DE seek to equip learners with critical competences to engage critically with local and global development issues and in the process examine assumptions held by themselves and others about people of the global South (Eten, 2015). Within such a liberating and empowering educational framework, this paper argues that DE discourses

can interrogate the negative assumptions held about IK as alternative forms of knowledge. DE can also create spaces for the inclusion of IK in educational processes (Odora-Hoppers, 2010), while highlighting its potential usefulness in EE for combating climate change in African societies.

Critical pedagogy promotes diverse and multiple ways of knowing and creates spaces in educational systems for IK to equip learners with broad perspectives of the human experience, but also uses indigenous knowledge as a counter-narrative to challenge hegemonic knowledge. Dei and Darko have noted that indigenous knowledge systems (IKS) can serve as alternative episteme and reference points for critical pedagogy 'to challenge the prevailing dominant ideological, political and socio-economic apparatus, structures and systems of mainstream schooling' (2015: 76). A similar view is expressed by Sandy Grande when she posits that, indigenous communities and their knowledge systems are 'living critiques of dominant knowledge systems … providing critical knowledge and potentially transformative paradigms' (Grande, 2004, cited in Dei and Darko, 2015: 79). In the specific field of EE, critical pedagogy is of potentially immense value through DE discourse. This can be seen in David Gruenewald's conceptualisation of 'critical pedagogy of place', a synthesis of critical pedagogy and place-based education. Gruenewald (2003) offers 'critical pedagogy of place' as an educational response that challenges commonly held assumptions that prevail in dominant cultures, while also providing an emancipatory pedagogy for decolonising educational systems in colonised societies, and placing education firmly within the ecological conditions of these societies.

Within a DE framework, postcolonial theory provides a counter-hegemonic narrative of development that seeks to deconstruct the impact of colonialism on colonised societies towards the reconstruction and transformation of current development in such societies (Kayire, 2015). Postcolonial theory, in doing this, seeks to counter the homogenising narrative of history that disregards the impact of colonialism and domination on colonised societies. Dei (2000) asserts that, an appreciation of indigenous histories and cultures of colonised societies must be a starting point, and

proceed from the situated account of colonised people themselves for a transformative dialogue in the decolonisation process. Dei further notes that colonisation and neocolonisation have thrived on the ascription of a false status and identity to colonised people through the privileging of western knowledge forms over IK forms. He therefore proposes an anti-colonial discursive framework as appropriate for discussing IK, which employs indigenous knowledge as an entry point in examining the power configuration that lie in knowledge production systems and how these contribute to maintaining and perpetuating colonialism in all its new forms in the current global order.

The case for IK in EE policies and programmes in Africa

IK, in this case, African Traditional Knowledge or rural people's knowledge or cultural knowledge in Africa (Millar et al., 2006) has been defined by Mosha as:

> "local knowledge generated and transmitted, over time, by those who reside in a particular locality, to cope with their agro-ecological and socio-cultural environment; it is knowledge that develops from the experience of people, passed down from generation to generation" (1999: ix).

The import and relevance of this definition as it relates to EE pertains to the fact that IK evolves from a people's interaction with their environment over time, and gets embedded in their ways of living to become part of their cultural traditions and beliefs, whilst serving as a guide in discouraging lifestyles that may be injurious to the environment. IK is often contrasted with modern, scientific and dominant western-based knowledge (Boko et al., 2007), and often identified with various features, among which have been outlined by Senanayake (2006) as locally-based, orally-transmitted, inter-generationally transmitted, fragmented in distribution, sustained by repetition, and a product of practical engagement with the environment in everyday life.

The processes and benefits of adaptation to climate change are local, and cannot be meaningfully pursued without considering the local socio-cultural context within which knowledge is produced for use in such adaptation practices (Kpadonou, Adégbola and Tovignan, 2012). IK is often labelled as local and traditional because it is produced in a local context for solving local problems of the environment (Masuku van-Damme, 1997), and this explains why the usefulness of IK in climate change adaptation practices is popular (Boko et al., 2007; Downing et al., 1997; Wiid and Ziervogel, 2012). In rural communities in Africa, indigenous methods of weather forecasting are particularly useful owing to the inadequacy or non-availability of scientific weather forecasting instruments and weather data, and reliance on IK for weather forecasting, farming and food storage practices in such contexts is locally useful (Kaya, 2014; Risiro et al., 2012). There exists within African knowledge systems, the wealth of information on patterns of climate change and associated warning signs, crop varieties, planting seasons, vegetation patterns and changes (Dei and Darko, 2015), which are useful for climate change adaptation practices. The IPCC (2007) for example cites indigenous food security practices amongst women in Africa, who are able to use IK to select drought and pest resistant crop seedlings for planting to protect their families against food insecurity during droughts and famine.

The usefulness of IK to climate action and to development processes generally have been acknowledged in many global and regional policy initiatives that exist to protect and promote indigenous knowledge. For example, as far back as 1977, the intergovernmental conference organised by the United Nations Education, Scientific and Cultural Organisation (UNESCO) on EE produced twelve principles known as the Tbilisi Declaration to guide EE, and one of these principles emphasised the need to consider the diverse socio-cultural and historical context of learners in educating them about issues of environmental protection (UNESCO, 1978; Van Damme and Neluvhalani, 2004). This principle has served as a foundation upon which calls for incorporating IK into EE have been made.

A United Nations Conference on Environment and Development (UNCED) in 1992 ended with the adoption of a blueprint for SD, known as Agenda 21, which had some of its recommendations directed at strengthening indigenous communities' capacities to protect and use natural resources for the promotion of sustainable development (Van Damme and Neluvhalani, 2004). Discussions at the Rio Earth summit in 1992, having highlighted the usefulness of IK in achieving SD, put IK high on the agenda of policy discussions and initiatives, and thereafter saw the establishment of regional IK resource centres across the world.

The New Partnership for Africa's Development (NEPAD) also gives recognition to the importance of IK in efforts to surmount Africa's challenges to SD, and through NEPAD's policies and programmes, IKS are being protected and promoted (Kaya and Seleti, 2013; Muchenje and Goronga, 2013).

The challenges of IK in African education

Despite the innumerable benefits IK can bring to development processes generally, and to climate action in particular, educational systems in Africa are said to lack in IK; often described as de-contextualised (Shizha, 2013). The de-contextualised nature of Africa's education systems has been attributed to the continent's past colonial experience, which consciously subjugated African forms of knowledge (Kayire, 2015; Muchenje and Goronga, 2013; Ngugi, 1986; Senanayake, 2006). Odora-Hoppers (2002) has noted that, in colonial times IK was systematically omitted from history textbooks in African schools, and in their stead, western knowledge and cultures were promoted, a phenomenon that can still be seen in most educational institutions in Africa. Kayira (2015) has also noted that, the impact of colonialism has not only been felt in territorial expansion, but has affected the epistemological foundations of the colonised, and led to a knowledge power imbalance between Africa and the western world, which is further maintained and perpetuated by forces of neoliberalism and globalisation (Shizha, 2010).

An examination by Shizha of the school curricula of a number of African countries in relation to content and practice around IK has revealed that, postcolonial curriculum innovations in Africa have been heavily influenced by western countries, and that some of the changes that were introduced 'were a "copycat" of Western curriculum forms'. These initiatives were carried out as projects promoted and sponsored by western countries and multilateral organisations like the World Bank (2010: 29). There are however a number of studies (Kayira, 2015; Mueller and Bentley, 2009; Shava, 2005) that point to the fact that some African states, especially in the southern African region, are beginning to mediate the influences of western forms of knowledge in their educational systems by introducing IK into their school curricula. A study by Mueller and Bentley (2009) on the Ghanaian Environmental and Science Education curriculum reveals conscious efforts of curriculum reform towards conserving and protecting IK on community ecosystems for a sustainable future. Discussions on the suitability of IK as valid knowledge and challenges of integrating IK into educational systems are well documented (Agrawal, 1995; Dei, 2002; Shizha, 2013), and a detailed rehashing of these challenges lies beyond the space of this paper.

Among these challenges regarding African school curricula, are issues of lack of autonomy on the part of African curriculum designers to incorporate IK contents into mainstream school practice without western influences. They also have to contend with the effects of globalisation and neoliberalism which continue to promote and spread Euro-American knowledge forms, while displacing IK in the process (Shizha, 2013). There are also concerns which stem from the heterogeneous nature of IK and limitedness in their potential general applicability to all contexts as well as their ability to fit neatly into standards of scientific enquiry (Agrawal, 1995). The documentation and discussions of these challenges may well be a good starting point to further action on systemising indigenous knowledge for the school curricula.

Conclusion

The persistent neglect of IK in African educational systems in post-colonial times cannot be entirely blamed on the entrenched knowledge power imbalance between Africa and the west, but also on the fact that, African elites, scholars and education policy makers are doing little to engage rural communities on their indigenous knowledge and practices towards the systemisation and incorporation of these indigenous knowledges and practices into the school curriculum (Kaya, 2013; Muchenje and Goronga, 2013). It may not be possible or even necessary to call for a replacement of western forms of knowledge in the African school curriculum, as there are obvious and enormous benefits to be gained from western knowledge forms. This article has instead called for IK to be revitalised and to occupy the African school curriculum side by side with western forms of knowledge (Dei, 2002; Muchenje and Goronga, 2013; Odora-Hoppers, 2002) especially for subjects that relate to the protection of the environment. There are global political and economic interests that stifle the incorporation of IK into educational processes in Africa and keep these forms of knowledge in the margins of development processes. However, a development education discourse around IK holds the prospect of exposing these global economic and political interests for what they are, whilst paving the way for the utilisation of IK to promote sustainable development in African states. Indigenous knowledge has the potential of building the adaptive capacities of people for climate resilient communities in Africa, and this underscores their usefulness in the African school curriculum and the urgent need for their revitalisation and utilisation.

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CLIMATE CHANGE: THE CHALLENGES AND OPPORTUNITIES FOR DEVELOPMENT EDUCATION PRACTITIONERS

Grace Walsh

Abstract: This article outlines the challenge of climate change for society, the role of development education (DE) in meeting that challenge, and the opportunities available to DE practitioners in addressing this issue. It outlines potential lessons and examples for DE practice that have arisen from experience of DE programmes taking place in an Ecovillage project in Co Tipperary, and suggests some elements for DE practice when tackling the topic of climate change. The article argues that the development education sector is well placed to create educational and learning spaces that can deal with the radical approaches and attitudinal shifts that are needed to face the challenges of climate change.

Key words: Development education; climate change; Ecovillage; place-based learning; sustainable living; community resilience.

> "The future is not about tinkering with the surface of structural change. It is not just about replacing one mindset with another that no longer serves us. It is a future that requires us to tap into a deeper level of our humanity, of who we really are and who we want to be as a society. It is a future that requires us to shift from an ego-system awareness that cares about the well-being of oneself to an eco-system that cares about the well-being of all, including oneself. Pioneering the principles and living the personal practices that help us perform this shift from ego to eco may well be one of the most important undertakings of our time" (Scharmer and Kaufer, 2013: 1).

The challenges we face as a result of climate change are monumental, as current debates and government-led negotiations have demonstrated. There is cynicism and optimism in equal measure over the possibilities of

governments, nations and communities being able to embrace the necessary lifestyle changes to reduce carbon emissions, and to implement adaptation measures needed to manage the transition to a low carbon or carbon neutral society. It is a daunting task, one met with fear and apprehension. Campaign groups, and to a lesser extent the media, are broadcasting warnings of the potential crisis ahead. The development education sector is well placed, however, to create educational and learning spaces that can deal with the radical approaches and attitudinal shifts that are needed to face these challenges. It has become clear though that the general public, and indeed practitioners, are overwhelmed by the task at hand. There is a fear that modern conveniences, quality of lifestyle and our very existence is threatened. There is a need to approach this challenge from a different angle, to inspire and to present opportunities for change that will in fact contribute to a more just and equal society, while also meeting the physical, social and personal needs of individuals.

Cloughjordan's Ecovillage in Co Tipperary, has been the location of a number of development education programmes over recent years, and offers a contextual learning base and new perspectives in how we can, as practitioners, engage with this issue. With recent research from the University of Limerick concluding that a household in the community has an average world footprint of 1.1 planets (Kirby, 2014a: 16), far below the national average, this is an exciting time to explore the implications of this experimental community for development education in relation to climate change. Not only does Cloughjordan provide examples of reducing carbon emissions at a community level, it presents concrete examples of adaptation, which can improve quality of life, community resilience and local livelihoods. The direct connection between theory and practice can inform a different approach to the issue for practitioners.

This article will connect with a previous contribution to this journal from Peadar Kirby (2014b), on paradigm shift, as well as practical experiences of programme implementation with a range of organisations in the sector. It will connect the experience of working with young people from

the global South, as well as other marginalised groups, student groups and returned development volunteers. In doing so, it will outline the possibilities for place-based learning in relation to developing a greater understanding of how we tackle climate change, and how the possibilities it can present, connect with wider development education concerns of social justice and equality.

The challenge of climate change

According to the 2014 IPCC report, climate change will be a likely catalyst for a wide range of social and environmental issues such as mass migration, growing inequality, resource shortages and a greater number of conflicts arising from the culmination of these pressures (Field et al., 2014). The World Bank warns that 'we're on track for a 4°C warmer world marked by extreme heat waves, declining global food stocks, loss of ecosystems and biodiversity, and life-threatening sea level rise' (Klein, 2014: 13). These impacts will be dispersed unequally, with younger people and future generations, people in certain regions and those already vulnerable through poverty or resource shortages feeling the brunt most forcibly. Climate change and its impacts are therefore enmeshed in the struggle for a more socially just world. The latest round of negotiations on the Sustainable Development Goals (SDGs) and their emphasis on sustainable agriculture, the development of sustainable energy sources, sustainable consumption, food security, bio-diversity loss and other areas of sustainable development speak to this. And note a growing sense of urgency amongst the world's leadership (United Nations Department of Economic and Social Affairs, 2015). It is also clear that cooperation between the global North and South is essential, and old concepts of linear development are no longer relevant or useful – if indeed they ever were. Nations, communities and individuals stand at a crossroads of potential collapse or transformation whereby adaptation and mitigation are crucial to meeting the challenges faced. New ways of thinking, living and co-creating the futures we want are necessary.

Unfortunately, however, people are not known for embracing radical change unless it is urgently needed. As Oliver Burkeman (2015) asserts,

threats that are distant and abstract are difficult for us to respond to, and we are not good at making small sacrifices in the present to avoid vast ones in the future. Daniel Kahneman, consistently pessimistic about our prospects as a species to stand up to the challenge, spells out his reservations clearly when he suggests that: 'No amount of psychological awareness will overcome people's reluctance to lower their standard of living' (Marshall, 2014: 58). Notwithstanding our apparent limitations in dealing with change, the sheer scale of the system which maintains and perpetuates the gap between human consumption and planetary capacity, presents its own predicament. The culture of mass production and consumption, which is so embedded in our definitions of development and societal wellbeing, is of course deeply entrenched in the current paradigm, which upholds 'the profound inequalities being generated by a free market system and the ways in which political authority has become deferential to the power of these markets (namely powerful economic corporations)' (Kirby, 2014b: 177).

Development education and climate change

Given the deep social challenges climate change presents, some educators have questioned the adequacy of traditional pedagogical methods and argue that novel approaches to facilitate transformation along both individual and broader community levels are needed. As Peadar Kirby suggests:

> "What can make the difference between collapse and transition is education; perhaps never before have educators been more challenged to provide spaces for society to grope towards a new future..." (2014b: 186).

DE offers a learning experience that develops understanding and awareness, engages learners with social justice issues, and inspires shifts in perspectives. However, there are profound challenges for DE in translating these shifts in perspective into meaningful action. Contributing to this, are deeply imbedded fears and a reluctance to embrace the kind of changes necessary, exacerbated by the sheer scale of the problem at hand. Another challenge lies in our entrenched assumptions reflected by the way in which the term

'development' is understood with its underlying association with linear 'progress'. Some educators speak to the power of language as a tool for framing the world we live in. Dawson, for example, explains how we are using nouns to define ever-changing realities, not language that is compatible and suitable for the uncertainties we face into. He describes the:

> "fabulous mosaic of beautifully attuned human adaptation to the specificity of place in which those who live in the desert, those who live in the forest, those who live on mountainsides, have each found stories, governance systems, material cultures, ideally, beautifully attuned to the specificity of the place, but this gets steamrolled under the linear progression of first world to third world, creating enormous damage" (2015).

Climate change as an opportunity for paradigm shift

> "Rather than asking 'how do we solve climate change' we need to turn the question around and ask 'how does the idea of climate change alter the way we arrive at and achieve our personal aspirations and our collective social goals?'" (Hulme, 2011: xxviii).

The sheer scale of some global justice issues can present themselves with an apparent immediacy and urgency that eclipses the threat of climate change which can appear distant or abstract in contrast. The topic of climate change can seem overwhelming and frightening to navigate with youth or community groups, or school children, in a way that doesn't leave people paralysed with fear, defensive, or in denial. This apparent disconnect between global environmental change and social justice issues can, however, be bridged by understanding them as products of the same economic and social systems. More importantly, for the DE sector, solutions to create more equal lifestyles and communities are, arguably, intimately linked to mechanisms tailored to addressing and adapting to climate change. These include local, indigenous economic models such as cooperatives and collaborative consumption models that sustain local livelihoods, build strong community connections, reduce carbon emissions and offer opportunities for

greater food security and resilience. Other positive steps towards more sustainable and equitable societies and communities include:

- Urban design that includes safe, efficient modes of transport that are economically sound and produce physical health benefits, as well as reducing commuting time;

- Housing and infrastructure design that is people-friendly, using ecological materials, renewable energy sources and designed to foster healthy, thriving community spaces, and not the isolated, inefficient and often poorly designed housing that many urban dwellers reside in;

- Local food production systems such as city farms, food cooperatives, urban green spaces to promote biodiversity and offer opportunities for edible landscaping, support small producers and make local, seasonal food accessible to all, again bringing benefits in the area of nutrition and challenging food poverty;

- Developing and fostering equitable relationships between global North and South nations, that allows a sharing of best practice in these areas, with a redistribution of income and resources that allows for sustainable, equitable, trade relationships which exist alongside healthy, local, indigenous economies.

Cloughjordan's Ecovillage: A living campus

The ecovillage Cloughjordan presents a unique living campus for educational programmes on climate change and sustainable development. The community, located in North Tipperary, Ireland, was established by a collective of people interested in sustainability and co-housing models. The first houses were constructed in 2009, and it currently consists of fifty-five households on a 67 acre (27 ha.) site. The development is divided between housing, farmland and amenities including more than 17,000 native trees and a varied edible landscape of fruit trees, herbs and edible plants. There is a

community district heating system that optimises renewable energy sources to heat homes and provide hot water, and houses are designed to the highest ecological standards, many maximising solar gain and insulation techniques. Some are equipped with rain water harvesting systems, as well as using a range of ecological materials – from the hi-tech passive homes to natural materials used in other models of housing. Seasonal produce is provided through local growing initiatives including the Cloughjordan Community Farm, which is based on the Community Supported Agriculture (CSA) model. A local baker makes bread in his wood fired oven while clusters of houses keep hens and share the responsibilities of ownership. Livelihood generation is supported and encouraged through work-live units, shared co-working spaces, a green enterprise centre, and the number of local companies and organisations based in the community. In 2014 a survey was distributed to the households of the Ecovillage for the purposes of estimating the community's Ecological Footprint (EF). It was estimated the Ecovillage's EF was approximately two global hectares per person, the equivalent of 1.1 planets per person (Kirby, 2014a). This compares well with the national average as well as the renowned Findhorn community in Northern Scotland.

The structures of the community, from decision-making to social spaces offer innovative approaches to all elements of community living, that challenge some of the more hierarchical and traditional structures elsewhere and allows for innovation and participation in a variety of ways. The community has essentially taken the challenge of climate change and sustainable living, and created a living lab of experimentation that offers insights, experiences, examples and lessons in the area of mitigation and adaptation. The company which first set up the project in 1999, Sustainable Projects Ireland Limited (SPIL), is a registered educational charity, and identifies as its purpose to build an ecovillage, which 'will serve as a model of sustainable living into the twenty-first century and will serve as an education, enterprise and research service resource for all' (Kirby, 2014a: 11). The Village Education, Research and Training (VERT) group coordinates activities and events for organisations and individuals who want to access learning opportunities in the community.

Experiences from the Ecovillage

Through my role as Youth Programme Coordinator for a Dublin based organisation, and as a freelance facilitator, I was involved in a number of educational programmes taking place in the Ecovillage from 2012 to 2015. These programmes varied from three- to ten-day learning experiences, mostly a combination of practical, voluntary based activities and non-formal education workshops, including those that specifically address topics such as climate change, sustainable development and community resilience, as well as wider social justice and development topics such as gender and migration. The programmes included young people from a variety of cultures, ethnicities and backgrounds, as well as adult volunteers, youth-workers and returned development workers. All of the activities included formal educational inputs from the Ecovillage, as well as opportunities to take part in educational tours, and a good deal of informal interaction with residents of the project. In total, these programmes have seen approximately 400 participants which does not include programmes run by additional educational providers based in Cloughjordan. Feedback from projects regarding the impact of the learning programmes in the community was consistently positive, with regular conclusions that participants' ability to take action in their own communities increased as a result of the experience. In limited surveys carried out after the experience of participation, all of those who took part said the experience 'made them feel more positive about making an impact' on the issue of climate change.

What made these learning experiences unique from a pedagogical point of view was the immersive element of so many of the activities. Programme participants didn't just learn about the theory of collaborative consumption, sustainable architecture, resilient communities and cooperative models of production, they experienced them directly in a variety of ways. This included: volunteering on the community farm to produce the food that they would later harvest and use to prepare meals; interacting with the residents of the community and hearing their personal experiences and stories of living there during weekly community meals; taking part in informal

learning events with residents when visitors came to Cloughjordan; benefiting from the warmth and comfort of the eco hostel and the district heating system; and encountering the rich diversity of projects, organisations and initiatives on offer within the wider community. Another added benefit to this 'immersive' approach was that participants often had prejudices, assumptions and misconceptions about 'eco' living shattered. By encountering people with a variety of interests, backgrounds and skill-sets who had chosen to make Cloughjordan their home, the concept of sustainable living could appear less exotic or abstract. The opportunity to live in, witness and experience an alternative system in action, enabled participants in our programmes and workshops to enter into 'emphatic engagement and identification' (Dawson, 2015) with notions of sustainability. It is this element that is crucial for us to move forward in DE, and to develop truly innovative and creative educational responses to the challenges of climate change.

Conclusion

Peadar Kirby's call to the development education sector 'to provide spaces for society to grope towards a new future' has yet to be answered (2014: 186). We can no longer educate without engaging in new frames and value systems if we are to promote a shift into fresh ways of seeing things or the new stories for our time (Macy and Johnstone, 2011). The DE sector is uniquely placed to trail-blaze in such a shift, if practitioners and organisations are courageous and daring enough to take these steps. This new approach to DE might incorporate the following elements:

- Creativity and experimentation in its methodologies and approaches;
- Promotion of immersive and experiential learning experiences;
- Critical analysis of the current paradigm and dominant notions of development, while allowing for the development and showcasing of community led initiatives that present solutions;

- Fostering of deeper links with local community initiatives and innovations that give practical, transferable examples of action, while supporting local and global sustainable development;

- Collaborative approaches to climate change creating opportunities for connections and a sense of common cause while pooling experiences and best practice in this area.

The Ecovillage project presents an opportunity, not to inspire others to replicate the project in its entirety, but rather to demonstrate and allow exploration of models, solutions, and shifts in thinking that can be applied to other communities in their contexts. By fostering critical analysis, prompting questions and facilitating the critique of economic and social constructs, DE practitioners can make critical steps 'to create the space to begin incubating a new social paradigm' (Kirby, 2014b: 182).

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A Development Education Perspective on the Challenges and Possibilities of Climate Change in Initial Teacher Education

Benjamin Mallon

Abstract: This article is based on a series of personal reflections gathered whilst addressing climate change through development education (DE) as a tutor on an Initial Teacher Education (ITE) course. The article explores the pedagogical challenges and possibilities of supporting student teachers in developing their own educational responses to climate change through DE. The article provides a practice-driven reflection on the importance of developing a strong understanding of climate science as the foundation for a deeper analysis of global interconnections. It also considers how participatory methodologies may support learners in an exploration of collective responsibility and collective climate action.

Key words: Development education; Initial Teacher Education; student teachers; climate science; participatory methodologies.

Climate change, influenced by human action, has caused and will continue to cause devastating damage to human and natural systems across the globe (IPCC, 2014; World Bank, 2014). At the same time, there is strong evidence that a rapid collective response to climate change, built around decarbonisation and sustainable development, may mitigate against the worst consequences of climate warming (ibid). This pressing need for action has raised questions as to how education should address the scientific, political and social dimensions of climate change (Mochizuki & Bryan, 2015). Whilst the complexity of climate systems holds a number of challenges for those tasked with developing educational responses, there is also recognition that climate change may offer a number of possible opportunities for education (Kagawa & Selby, 2010). This article considers the implications of climate change for development education (DE). As a form of pedagogy which aims to foster active engagement with unequal and unjust global interconnections

and their associated responsibilities, what role might DE play in meeting the challenge of climate change? What possibilities might climate change hold for DE? Through a series of personal reflections upon my own DE practice in delivering the climate change component of a primary Initial Teacher Education (ITE) module, I seek to provide a descriptive, practice-driven discussion of some of the challenges and possibilities of addressing climate change through DE.

In the first section of the article, I consider students' existing knowledge and understanding of climate change, before exploring the challenges of providing a strong understanding of climate science. The next two sections reflect on the connections between climate change and a number of major development issues, before exploring how, in its own right, climate change brings to light many of the deeply asymmetrical interconnections between countries of the global North and those of the global South. The final section considers the challenge of developing educational responses to climate change which promote the necessary forms of action required to tackle this global issue.

Understanding climate science: The foundations for successful climate change education?

Throughout each of the four ITE sessions focused on climate change, participatory DE methodologies were the major tool employed to support students' climate learning and to develop their collective abilities. The series began with an initial small-group discussion which explored students' personal and shared experiences and understandings of climate change. This opening activity provided a basic assessment of students' prior learning, and revealed varying degrees of existing knowledge, both in relation to climate change and other development themes. Whilst some students were able to offer a basic description of the causes and consequences of climate change, sometimes drawing upon their knowledge from science education and geography education modules, many students were unsure of the basic terminology of climate science. Limited public understanding of climate change is recognised as a barrier to effective action (Gonzalez-Gaudiano &

Meira-Cartea, 2010), and it was immediately clear that addressing the fundamental aspects of climate science was essential in order to provide a grounding for any future climate learning.

In a continuation of these group discussions, students were encouraged to consider the diversity of experiences within the class and collaborate to formulate a series of questions about climate change that they would like to be addressed. Common questions centred on the historical basis of climate change (how do we know the climate is changing?), the anthropogenic nature of this change (how do we know that humans have contributed to this situation?) and the ongoing predictions of climate change (how do we know the situation will get worse?). This collection of questions was to form an important basis for subsequent learning activities, both as a means of placing the students at the centre of the learning process, and as a tool to support students' self-assessment. I also felt it important to include questions which addressed important gaps in students' existing knowledge, namely the fundamentals of climate science (for example, what is the difference between weather and climate?).

With the initial assessment in mind, I was able to call upon the range of activities I had prepared to explore some of the key aspects of climate science. These activities included an exploration of the difference between weather and climate, as well as an analysis of a series of media sources which explained the fundamentals of climate change. Although time was limited, students had such differing levels of climate science understanding that supporting students to build a solid climate science foundation appeared necessary before any exploration of the socio-political aspects of climate change. Although there is a need to focus on the political, social and economic causes of climate change, understanding the scientific foundations is essential (Gonzalez-Gaudiano & Meira-Cartea, 2010; Kavanagh et al., 2012). This reflection raised a number of questions for my own practice: whilst climate change education in ITE is limited by time, how might I be able to develop my own educational practice to support learning about climate science alongside the examination of socio-political aspects of

climate change? Certainly providing access to clear definitions of key terminology throughout the climate change education process would benefit in this regard. Other avenues may include developing resources which support the more gradual development of climate science understanding through case studies focusing on different dimensions of climate change.

Exposing climate change interconnectedness

Building on the foundations of climate science, the sessions progressed to consider some of the socio-political dimensions of climate change. This focus enabled students to explore how climate change had serious implications for many of the development issues with which they had previously engaged as part of their course. The importance of such connections is clear: a future increasingly dominated by climate change would be marked by decreasing food security, poorer health, increased displacement and conflict, each further aggravated by the instability of environmental hazards, such as extreme weather events (Mochizuki & Bryan, 2015; Strachan, 2014). These discussions highlighted that climate change education may offer development educators the opportunity to explore a range of global development challenges, and importantly, to consider how many of these issues are interrelated. Some students were able to connect climate learning to their existing knowledge of development issues, occasionally forming important connections between issues which are often treated separately, for example linking extreme weather conditions such as drought to diminished food security and subsequent migration.

Bryan and Bracken (2010) have identified that some students within ITE have dismissed climate change as irrelevant to their own lives. Indeed, finding creative ways of illustrating global interconnections, namely the relationship between the policies and practices of governments and citizens in the global North and climate change, proved a considerable challenge. In reflecting upon learning activities which exposed global climate connections, an important approach in my future practice would be to 'close the loop' on some of these global connections. In short, this would involve clearly linking

the consequences of climate change experienced by people in the global South, to the causes of climate change, namely the actions of societies in the global North. Extending this chain of causality would prompt more focused discussion on the responsibility for contributing towards, but also potentially addressing, climate change (Mochizuki & Bryan, 2015). For example, extending a previous set of connections by illustrating, with greater clarity, how consumer practices and governmental policies in the global North exacerbate climate change, causing amongst other effects, extreme weather conditions such as drought, which lead to diminished food security and then to large scale migration.

From a personal perspective, reflecting upon the issue of interconnection also highlighted the need for the inclusion of climate change perspectives within my own DE practice and research. In light of the emerging literature which explores the relationship between climate change and violent conflict (for example, Barnett & Adger, 2007; Hsaing, Burke & Miguel, 2013) how can my own understanding of violent conflict be deepened by including a consideration of climate change? How might my future research exploring peace-building DE consider the impact of climate change on violent conflict? As approaches towards tackling poverty and reducing global inequality seem irrevocably bound to climate change (IPCC, 2014; World Bank, 2014), there would appear a clear need for development educators to engage with climate change, as a theme which is an increasingly important dimension of many, if not all of the major contemporary development challenges.

Critical engagement with climate interconnectedness

A major part of my reflections throughout these sessions included a consideration of how best to develop a deeper critical engagement with the range of global interconnections which had emerged in sessions with students. I had spent time considering how I might be able to support a deeper analysis of these climate connections, and whether these interconnections could serve as a basis for examining individual and collective roles and responsibilities in relation to climate change. Once

again, participatory and collaborative DE methodologies provided a platform for a deeper analysis of climate interconnections aimed at stimulating students to consider their positions within these climate interconnections.

Through a series of case studies, students considered how climate change has impacted on the lives of people in the global South. Most students appeared to grasp that the effects of climate change are felt most acutely by people in the global South who have least responsibility for its causes (Selby, 2015), and as such, climate learning offered an opportunity to explore the unequal nature of particular global interconnections. These narratives also revealed how extreme weather events have exacerbated food insecurity, and often explored how communities have responded to the impact of climate change. These forms of adaptation (how do we build resilience towards the effects of climate change?), alongside mitigation (how do we reduce carbon emissions?) are recognised as central components of the response to climate change (Mochizuki & Bryan, 2015). Whilst exploring existing adaptations provides important climate change understanding, I felt that at times a focus on existing adaptations in the global South, and possible future adaptations in the global North, deflected from the more pressing requirement for climate action to reduce carbon emissions. I questioned whether the focus should lie to a greater extent on the need for mitigation, and engaging with the more difficult task of challenging the practices which lead to climate change. Certainly in the future, one approach in this regard might be to develop an activity based around the appropriateness and urgency of particular climate action, considering both mitigation and adaptation in different contexts.

Another key reflection here focused on an underdeveloped aspect of my practice – the need to ensure that individual contributions towards historical and ongoing climate change (for example, personal carbon footprints) are situated within a broader collective responsibility. This approach was particularly important as these individual actions have such a damaging effect in light of the fact that they are part of a much broader collective use of fossil fuels (Mochizuki & Bryan, 2015). The development

of learning activities which elucidate the importance of collective impact upon climate change would further strengthen my teaching in this area. Indeed, such an approach could also lay the foundations for climate actions which go beyond the individualised.

As the increasingly weighty burden is passed on to future generations, climate change has been viewed as a matter of intergenerational justice (Gibbons, 2014; Mary Robinson Foundation, 2013). This factor is another important, yet underexplored area within my own climate change education practice. Throughout the sessions, there were a number of opportunities for exploring this approach, particularly as ITE students will themselves be working with young people and members of future generations, for whom climate change will be an increasingly important issue. Considering the people currently affected by the consequences of climate change, as well as those who will be affected in the future, adds an important dimension to any discussion of interconnection. A focus on the theme of intergenerational justice within climate change education may also provide an important opportunity for development educators – namely a genuine positioning of young people at the centre of educational approaches which address climate change.

Dobson (2006) has argued that engaging with the causal relationships behind climate change can provide students with the opportunity to explore deeper connections and, thus, encourage action. Considering the responsibilities that are attached to the interconnections linking global issues such as climate change needs to be matched with an ability and means to bring about change. Exploring the causes and consequences of climate change offers DE an opportunity to expose deep global interconnections and interdependence. Yet even with a clearly articulated causal relationship, the question remains, how might DE respond to the climate science and consequences of climate change and support learners to take meaningful climate action?

Meeting the responsibility for climate change through pedagogies of collective action?

In response to the need for climate change education to move beyond the promotion of individualised actions (Kavanagh et al., 2012) the sessions which sought to address the ideas of transformative action incorporated collaborative methodologies. My hope was that utilising these approaches would promote consideration of both collective responsibility and collective action, whilst avoiding the possibility of climate change being viewed as overwhelming, disempowering and thus stifling action (Hiller, 2010).

Adopting active learning methodologies is recognised as a challenge for many inexperienced development educators (Bryan & Bracken, 2010). Across each of the climate sessions, I made a concerted effort to foster discussion around the ways in which such methodologies could be undertaken within DE scenarios. Whilst discussion around the role of development educators during the process of collaborative methodologies seemed fruitful, there appeared to be a need to provide students with a deeper theoretical basis for these approaches, and if possible, a connection to other areas of the curriculum where group work methodologies had been explored.

Despite the increasing political commitment towards addressing climate change, it is clear that an overemphasis on incentivised financial policies or 'technological fixes' will not produce the deeper transformation required to address climate change (Kagawa & Selby, 2010; Mochizuki and Bryan, 2015). This raised the question of whether, as a development educator practicing within a formal education system, I am able to stimulate climate change action which extends beyond the technological and financially incentivised. Despite taking small individual steps towards overcoming the 'soft' DE approaches that limit the possibilities of transformative actions (Andreotti, 2006; Bryan & Bracken, 2011) a key challenge to exploring action which goes beyond the technological fix was the limitations of time. The overcrowded ITE curriculum has already been recognised as leaving little time for critical DE (Bryan & Bracken, 2012), and with such constraints, I felt that creating opportunities for the action-

related learning remained an ongoing challenge throughout my CCE practice. Making space for aspects of climate change education which addresses the need for collective action is essential. Whether climate action can be further prioritised within climate change sessions for ITE, or indeed infused throughout all aspects of my future DE practice is a question that I will need to return to.

Conclusion

Utilising reflective practice as a DE learning tool (Bryan & Bracken, 2010), this article has offered a series of personal reflections on some of the pedagogical challenges and possibilities of supporting ITE students in developing their knowledge and understanding of climate change. It is recognised that ITE needs to provide learning opportunities for student teachers to consider their own roles and responsibilities within broader global issues (Waldron, 2014) and, from a personal perspective, exploring climate change through DE may offer a great deal in this regard.

DE offers an important critical space for the consideration of the socio-political dimensions of climate change, through a social and global justice approach (Kavanagh et al., 2012). However, there are a number of challenges which present themselves, particular within the context of ITE. Supporting a solid understanding of the scientific basis for climate change may pose a challenge to DE in certain contexts, but is an essential foundation for a deeper exploration of the socio-political dimensions of climate change. Building upon students' existing knowledge with concise climate science appears essential in supporting an informed dialogue around climate change. In the initial stages of climate change education, exploring the personal and shared experiences and understandings of climate change through active and participatory DE methodologies may later support exploration of the historical causes of climate change as a collective factor, but might also foreground the types of collective response to climate change which are so badly required.

Climate change is a clear example of a global system marked by historical and ongoing unequal relationships between the global North and the global South, and is deeply entwined with major development issues, such as conflict, famine and forced migration. These connections raise uncomfortable questions around the backward facing responsibility for the causes of climate change, and the forward facing responsibility to act against climate change. Climate learning illuminates issues of interdependence and interconnectedness which have prompted deep reflections on other aspects of my professional practice.

There is a pressing need for educational responses to global issues, such as climate change, to finds ways of moving beyond simply supporting individualised action and technological fixes. Incorporating collaborative DE methodologies within my climate change education practice may provide an opportunity for students to move towards collective action on climate change, but there is also a need to support these students in developing the confidence to employ these methodologies in their own DE practice. DE seeks to support learners in considering and taking action in light of their roles and responsibilities in an increasingly globalised world. Climate change is recognised as one of the most pressing issues of our time, and challenges development educators to support collective action against climate change through decarbonisation and sustainable development. At the same time, climate change also offers an opportunity for development educators as an issue which demands an ongoing commitment to social justice, so pivotal to transformative DE (Bryan & Bracken, 2011).

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Viewpoint

FROM CHARITY TO UNIVERSALITY?

Hans Zomer

Abstract: Recent issues of *Policy and Practice*, including this one, have carried articles reflecting on the new Sustainable Development Goals (SDGs), to be agreed at the United Nations (UN) in September 2015. Many of the articles have pointed at the failings of the Goals' predecessors, the Millennium Development Goals (MDGs), while others focused on the sector's focus on aid to the detriment of a more fundamental critique of development discourse. In this article, **Hans Zomer**, Director of Dóchas, argues that the new SDGs will have a bigger impact on development education (DE) practitioners than they might expect. He suggests that DE and the wider development sector should take the more universal approach adopted by the SDGs to press for sustainable solutions to long-term poverty that move us away from the more dominant and short-term charity model.

Key words: Sustainable Development Goals; Millennium Development Goals; aid; charity; universality.

It has been said many times before in *Policy and Practice*, but it bears repeating: 2015 is a crucial year for anyone remotely interested in global development. In September, world leaders will agree a new global compact to end extreme poverty and fight inequality, while in December the world is set to agree a new strategy to halt climate change. The importance of these summits prompted the European Union to declare 2015 the 'European Year for Development' and at the Irish launch event for the 'Year', Irish President Michael D. Higgins spoke of his belief that '2015 is on a par with 1945 in terms of the potential that it has to reshape how humanity deals with the challenges we face' (2015).

In his speech, the President also said that:

> "Too often has the term 'development' been used interchangeably, in public discourse, with the terms 'aid' or 'charity'. Development was presented as something that needed to happen in the so-called 'developing' world, outside of the sphere of industrialised nations, and remote from the daily existences of Western citizens. Such a binary view of development can all too easily slide into a sense of condescension grounded in unspoken feelings of superiority. At the very least, it divides the world in two, with one side depicted as helpless victims, and the other as their well-meaning saviours … We can only rejoice, then, at the universal scope of the development goals currently in the making at UN level. Contrary to their predecessors, the Millennium Development Goals, which were targeted at poorer countries, these new post-2015 goals are not about some of the world's nations only; they are about the crucial task of building new forms of living together, here and there. It is an agenda everybody can own and contribute to."

These words must be music to the ears of any development education practitioner. And they point at the very essence of the new Sustainable Development Goals, highlighting their distinguishing factor: their universality. Not only do the new goals highlight that 'Sustainable Development' isn't something that only 'developing' countries should work towards, but that each UN member state needs to find a model of progressing in a way that respects the needs of current generations as well as of future generations and of the planet that we live on.

Bringing the SDGs to Ireland

The Sustainable Development Goals provide an internationally agreed framework, setting out what matters if we are trying to build a better, fairer society. They are a recognition of the fact that the world economy is doing well in the generation of wealth, but is failing to do so in a sustainable way and in distributing the wealth equally or equitably. And Irish diplomats have played a crucial role in shaping this new framework; the final and crucial phase of the negotiations was coordinated the Irish and Kenyan ambassadors

to the UN, David Donoghue and Macharia Kamau. And Irish non-governmental organisations (NGOs), too, played a role in the negotiations. Throughout 2013 and 2014, the members of Dóchas, the Irish association of non-governmental development organisations (NGDOs), worked with domestic environmental and anti-poverty groups to come up with shared priorities for a better world and using this vision of 'The World We Want' to inform their international lobby. A lobby which connected well with domestic civil society groups, because the themes being discussed at UN level resonated closely with many of the challenges experienced in Ireland.

Post-Celtic Tiger Ireland is in a funk. The financial crash of 2008 not only damaged our economy, but also our national confidence. The crash not only burst the bubble of the speculative economy, it also shattered a view of Ireland and the Irish, symbolised most dramatically in the handover of our economic sovereignty to the International Monetary Fund (IMF) and European Central Bank officials. With the death of the Celtic Tiger a sense of who we are as a nation and what our future would be like died with it – and this vacuum has still not been filled. Ireland is facing stark choices. In the words of Michael D. Higgins, post-Celtic Tiger Ireland must 'close the chapter on that which has failed, that which was not the best version of ourselves as a people, and open a new chapter based on a different version of our Irishness', something which 'will require a transition in our political thinking, in our view of the public world, in our institutions, and, most difficult of all, in our consciousness' (ibid).

This is very similar to the sentiments expressed in the Declaration for the SDGs, which include these words:

> "We are meeting at a time of immense challenges to sustainable development. Billions of our citizens continue to live in poverty and are denied a life of dignity. There are rising inequalities within and among countries. There are enormous disparities of opportunity, wealth and power … The survival of many societies, and of the biological support systems of the planet, is at risk" (2015: 4-5).

In other words, what world leaders are saying is that, like Ireland, the world must re-think its priorities and come up with new answers to the question of what type of society we are trying to build. How do we ensure prosperity for all? What does an education system that delivers for everyone look like? How can we build an economy that pays people a living wage and that respects the environment? What do we need to build cities that are healthy and wealthy?

No monopoly on wisdom

This recognition of shared challenges and universal responsibility is what sets the SDGs apart. As Michael D. Higgins said in January of this year (2015), 'there is no single correct model of development … The idea of a linear path to progress and modernity is one that has created much damage in the past'. He also said that 'we are invited to piece together a new narrative telling us of humanity's shared future on this fragile planet'. And development NGOs are extremely well placed to lead the discussions on such a new narrative. Their experiences in communities around the world provide them with an opportunity to see things differently, and to experience alternative solutions to our shared problems. As organisations with a global remit, we should be the ones with the ability and courage to comment on issues at home – on the basis of our experience abroad.

> Instead, says Dhananjayan Sriskandarajah of CIVICUS (2014):
>
> "our conception of what is possible has narrowed dramatically. Since demonstrating bang for your buck has become all-important, we divide our work into neat projects, taking on only those endeavours that can produce easily quantifiable outcomes. Reliant on funding to service our own sizeable organisations, we avoid approaches or issues that might threaten our brand or upset our donors. We trade in incremental change."

All too often therefore, instead of producing the 'new narrative' required, we have used a language that is part of the problem, not the solution. An analysis by Dóchas of the public communications by a handful of Irish NGOs

showed that the dominant message was one of 'charity' and that the most common solution suggested by Irish NGOs was a financial donation to charities, rather than political or personal action. Dóchas' *Finding Irish Frames* (2014) research report suggests that, by and large, Irish NGOs have focused their efforts on fundraising from the Irish public, rather than on supporting social, political or conceptual change. And their portrayal of people living in poverty in passive, recipient roles, rather than as agents of change or sources of innovation, is not helping either.

That our communications habits have an impact is clear. Research undertaken by Dóchas in 2013 and 2015 shows that, for a majority of people, the Irish public's understanding of global poverty and development has not changed since the 1980s: 60 percent of respondents in the research survey did not think that the countries in Africa are any better off now than they were twenty years ago and 49 percent of respondents agreed with the sentiment that 'my day to day actions don't really affect people in the third world' (Dóchas, 2014). The vast majority of people in Ireland surveyed said the causes of poverty reside within developing countries themselves and 25 percent felt there was nothing they could do personally to reduce poverty. These findings suggest that the message about global change is not being heard above the din of media headlines and NGO fundraising – and that the emphasis on 'urgent and dramatic' stories overshadows efforts to educate and convey more complex messages. The dominant 'charity frame' highlights the importance of the Irish entities and downplays the everyday heroism of countless people in developing countries who are working hard to make their countries healthier, wealthier, safer and more democratic.

What's more, if this research is to be believed, we have failed to 'link the global and the local'. Why have we not linked the Irish financial crisis with our experience of austerity in developing countries? Why have we been silent on the challenges of Irish oil and gas, when we have first-hand experience of similar situations in Nigeria, Uganda and Venezuela? Why don't we use our experience of organic community farming in Africa to inform the debate on this issue here at home? Why don't we work to get the

voices of people working in refugee communities in the global South to be heard in the migration debate in Europe? Are we ourselves too caught up in the 'binary view of Development' to realise that social movements in places like Egypt, Kenya, Brazil or Burma can enrich our political debate here? And most of all: why have we not learned to use the power of social media and mobile video to let people in developing countries make their own voices heard, and be relevant in their own way?

It may well be that the biggest impact of the soon-to-be-agreed SDGs will be that they give us one common language, that will help us break out of our silos and teach us the true meaning of universality.

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Resource reviews

ROOTS OF CLIMATE CHANGE DENIAL

Review article by David Selby

George Marshall (2014) *Don't Even Think About It: Why our brains are wired to ignore climate change*, New York: Bloomsbury

Naomi Klein (2014) *This Changes Everything: Capitalism vs. The climate*, London: Allen Lane

In *Don't Even Think About It*, George Marshall devotes very little space to the science of climate change. What science there is appears in a four-page add-on chapter at the very end of his 260-page book. His motive here is to underscore that the climate change challenge is not primarily techno-scientific but rather psychological. The book is also remarkable in its lack of references, citations and footnotes (though he does provide a regularly updated online set of references for each chapter: http://climateconviction.org/refs.html), his clear intention being to convey that the conventional apparatus of academe is neither fit for purpose nor effective in bringing people to seriously confront climate change. For similar reasons, the reader is also spared graphs and diagrams. His thesis is that, across efforts to have climate change taken seriously, there has been too great a recourse to scientific data that alert our brains to the existence of the climate threat but are insufficient by way of stimulus that galvanises our emotional brains into action.

In a dizzying procession of thirty-nine short chapters, Marshall deals with the psychological barriers and processes that foster climate change avoidance and denial. He discusses *confirmation bias*, i.e. the tendency to cherry-pick and assimilate data that fit comfortably with our existing knowledge, attitudes, assumptions and beliefs. Climate change, being multivalent, resistant to neat categorisation, lacking a clear beginning and

end and lacking geographic specificity, readily lends itself to confirmation bias. He covers *availability bias*, i.e. the tendency of people to make up their mind on the basis of what evidence is most readily to hand. He looks at *pluralistic ignorance*, i.e. the process whereby false consensus is created within a group through individuals suppressing their views, resulting in the group overestimating adherence to its position (something that can affect climate activists as much as deniers and drive both further apart). He explores why we are so poorly evolved to deal with climate change in that our psychological evolution has attuned us to respond to short-term personal and/or group threat, abrupt threat, threat that leaves us repulsed or disgusted, and immediate danger. Climate change, Marshall says, more or less fails to match these long-conditioned threat prompts. 'The psychological tools we have evolved to cope with previous challenges may turn out to be inappropriate for this threat' (48).

But, for Marshall, of greatest relevance to our response to climate change is the emerging understanding in evolutionary psychology that we have two parallel information-processing systems that he, for purposes of brevity, calls the *rational brain* and the *emotional brain*. The former is analytical, logical, the source of definition and description. The latter draws on personal experience, is driven by emotion and communicates through story and image.

> "Because the emotional brain is poorly suited to dealing with uncertain long-term threats of the kind that constitute climate change, the rational brain sometimes actively intervenes, using its abstract tools of planning and forward thinking … And this is exactly what we do with climate change, both personally and culturally. The theories, graphs, projects, and data speak almost entirely to the rational brain. This helps us to evaluate the evidence and, for most people, to recognize that there is a major problem. But it does not spur us to action" (49-50).

To excite the emotional brain, the approach has to be multidisciplinary, going much beyond the rational brain redoubt of science. 'The view held by every specialist I spoke too', he adds, 'is that we have still not found a way to effectively engage our emotional brains in climate change' (ibid).

So, advocates for climate change action have to do everything they can to speak to both brains in tandem. Climate change understanding has to be fostered by translating data into forms that 'will engage and motivate the emotional brain using the tools of immediacy, proximity, social meaning, stories and metaphors that draw on experience' (ibid). There needs to be an alchemical turning of 'base data into emotional gold' (50). Marshall seeks congruence with what he recommends by telling stories. While there is little science as such there is a succession of stories and anecdotes emanating from encounters and interviews with scientists as well as with psychologists and other academics, climate skeptics, homespun-tone Tea Party activists, climate change and environmental activists, and corporate executives.

The book offers a wide array of examples of *cognitive dissonance* among politicians and corporate leaders whereby they rhetorically attest to the seriousness of climate change, on the one hand, while enacting policies inevitably increasing CO_2 emissions, on the other. It is equally strong in demonstrating cognitive dissonance with respect to climate change across our everyday utterances, decisions and actions. There is an important chapter for educators, titled 'The Power of One' that critically examines the emphasis that has been put by environmental organisations and champions over the last fifteen years on personal responsibility for climate change. Emphasis on personal behaviour change has often led to a critical mismatch between diagnosis of problem and proposed curative steps. Al Gore's film, *An Inconvenient Truth*, posits climate change as an existential threat but, in a damp squib ending, offers changing light bulbs and driving somewhat less as fit-for-purpose responses.

The emphasis on individual action diverts attention from structural causes and takes the heat off government, business and the fossil fuel

companies. It is also bad, says Marshall, for both those accepting of climate change and those stubbornly resistant to its importance. For the former, one or more small good deeds (such as installing energy-efficient light bulbs) often allow them to transfer moral license to other areas (such as leaving the lights on much longer or rewarding 'good behavior' with vacation travel to the other side of the world). For the latter, emphasis on personal responsibility is perceived as a blame game on the part of those who would subvert their lives, so further fuelling their sectarian prejudices. There are big messages in all of this for classrooms around the globe where children are encouraged to measure their ecological footprint but structural aspects of climate change are left unaddressed.

It is only in the last three main chapters that Marshall proffers solutions to climate change avoidance and denial, the final chapter setting out some fifty 'ideas for digging our way out of a hole'. In answering the question posed by his sub-title, he responds that we are 'not inherently "wired" to ignore climate change' and that the majority around the world accept it as a major threat and might well be prepared to support the necessary transformations but 'currently feel isolated and powerless'. 'Human history', he observes, 'provides so many examples of social movements that have overcome apparently impossible obstacles that we know we should be capable of meeting this challenge' (230).

On the cover sleeve of *Don't Even Think About It*, Naomi Klein describes Marshall as 'one of the most interesting, challenging and original thinkers on the psychology of our collective climate denial'. Her own book, *This Changes Everything*, likewise focuses on the psychology of climate change denial but is primarily concerned with showing how the neoliberal capitalist agenda stokes denial and with revealing the machinations of rightwing think tanks, neoliberal lobby groups and corporate elites as they seek to debunk climate science and devitalise climate change action and activism.

Early in the book, Klein is at pains to underline the deep psychological underbelly of climate change denial. 'We deny', she writes, 'because we fear that letting in the full reality of the crisis will change everything. And we are right'. The threat is such that it is hard to keep it in one's head for long. Even the climate-concerned are susceptible to 'on-again-off-again ecological amnesia' (4). Denial has led to obfuscation and procrastination at the highest level. The annual UN climate summit which she describes as 'the best hope for breakthrough on climate action' has 'started to seem less like a forum for serious negotiation than a very costly and high-carbon therapy session, a place for the representatives of the most vulnerable countries in the world to vent their grief and rage while low-level representatives of the nations largely responsible for their tragedies stare at their shoes' (11). The situation has come to such a pass that a deep realisation is dawning that 'our leaders are not looking after us', that 'we are not cared for at the level of our very survival' (12). Even the globally agreed objective of not allowing surface temperatures to rise above 2.0^0C – a level seen by many scientists as neither achievable nor livable with – has not been arrived at out of concern for the wellbeing of the global majority but rather to ensure minimisation of economic disruption.

So, Klein asks, 'what is wrong with us?' (18). The answer she regards as relatively simple: 'we have not done the things that are necessary to lower emissions because those things fundamentally conflict with deregulated capitalism, the reigning ideology for the entire period we have been struggling to find a way out of the crisis'. Very little has been written, she asserts, about 'how market fundamentalism has, from the very first moments, systematically sabotaged our collective response to climate change, a threat that came knocking just as the ideology was reaching its zenith' (19). In the all-pervading neoliberal climate, the climate change and environmental movements have 'wasted precious decades attempting to make the square peg of the climate crisis fit into the round hole of deregulated capitalism, forever touting ways for the problem to be solved by the market itself' (20). In those precious decades, too, multinational corporations have been freed of constraints that would have curbed global

warming. At the heart of the matter is a choice between accepting levels of climate disruption that 'will change pretty much everything about our world' or, alternatively, changing 'pretty much everything about our economy to avoid that fate' (22). Tweaking the status quo is no longer an option. 'The thing about a crisis this big, this all-encompassing', she concludes, 'is that it changes everything. It changes what we can do, what we can hope for, what we can demand from ourselves, and our leaders. It means there is a whole lot of stuff that we have been told is inevitable that simply cannot stand. And it means that a whole lot of stuff we have been told is impossible has to start happening right now' (28).

The book is divided into three sections. The first, 'Bad Timing', explores the unhappy coincidence of the apogee of neoliberalism and the quickening onset of climate change. It looks at climate contrarian responses from within those espousing market fundamentalism (sometimes shockingly self-serving and cynical) and pinpoints reasons humanity is failing to rise to the climate moment, i.e. because of the inherent challenge to the hegemonic economic paradigm, the myths those in especially Western cultures feed on (e.g. separation from and superiority over nature), the threat 'changing everything' carries for what we see as our identity ('I shop therefore I am'), and the fact that rising to the climate change challenge would lead to the dwindling then extinction of some of the richest and most politically powerful industries.

In the second section, 'Magical Thinking', Klein unpacks and deconstructs technical fixes for climate change including geo-engineering schemes that are manna to the neoliberal table. Some are eye-widening horror stories. She recounts attending a geo-engineering conference at a stately home in England at which 'plausible and promising' technologies for cooling the Earth going under the title of 'Solar Radiation Management' were considered. These involve deflecting or dimming the sun's rays using space mirrors, spraying seawater into the sky to increase cloud cover and spraying sulfuric acid particles into the stratosphere. The entire three-day conference seemed oblivious to the fact that we do not understand the workings of the

Earth well enough to so play with fire. A simpler way forward, it would seem, would be to leave carbon in the ground.

A more hopeful tone pervades the third section, 'Starting Anyway', in which Klein deals with movements that are emerging in a variety of contexts and forms to challenge the neoliberal order. In a long chapter, for instance, she describes 'Blockadia', a new style of environmental activism in which people block the appurtenances of the extractive industries from entering natural regions that are under threat from fossil fuel extraction. What seems problematic about this section is that Klein fails to examine examples of no-growth, slow-growth and steady state economic systems and relationships that are emerging and being practiced in increasing numbers. Instead she focuses on local struggles against environmental damage and exploitation. The weighting is very much towards forms and struggles of resistance, important as they are, rather than processes of rebuilding.

The two books are essential reading for educators concerned with the threat of runaway and devastating climate change. For development educators as such – as well as those in contiguous fields – they highlight some important to-dos:

- Ensure that the message goes out that climate change is for cross-curricular treatment; it is neither the exclusive nor primary province of the science educator;

- Develop curricula and curriculum materials enabling learners to decode and deconstruct climate change avoidance and denial; in this regard determine what skills, knowledge, conceptual tools and lexicon learners need to unpack and challenge climate denial;

- Develop learning approaches that motivate the emotional brain such as climate justice stories, the sharing of personal experience, metaphorical learning activities, image-making, imaginative learning journeys, somatic learning, action learning experiences in the immediate community;

- Ensure that learning programmes and modules examine how the neoliberal growth agenda and mindset have fomented and quickened climate change and how it is holding back effective, fit-for purpose climate change action.

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CONTESTING AND CONSTRUCTING INTERNATIONAL PERSPECTIVES IN GLOBAL EDUCATION

Review by Douglas Bourn

Ruth Reynolds, Deborah Bradbery, Joanna Brown, Kay Carroll, Debra Donnelly, Kate Ferguson-Patrick and Suzanne Macqueen (eds.) (2015) *Contesting and Constructing International Perspectives in Global Education,* Rotterdam: Sense Publishers.

In recent years there has been a growth in publications on the themes of global learning, development education, global citizenship and global education. This edited volume, produced by academics and researchers from two universities in Australia, provides an important addition to the discourse around global education. Whilst most of the authors are based in Australia, there are also contributions from North America, Europe, Africa and Asia and it is a conscious attempt to promote a range of perspectives on global education, both in terms of definitions and concepts but examples of practice.

In addition to a useful introduction from the editors on interpretations of global education, the volume has seventeen short chapters under five themes:

- Temporal and Spatial Views of Global Education;
- Telling National Stories of Global Education;
- Empowering Citizens for Global Education;
- Deconstructing Global Education; and
- Transforming Curricula for Global Education.

Among the authors of the various chapters are well known figures within global education who are likely to be known to readers of this journal. They include Graham Pike, Mags Liddy, Fran Martin, Trevor Davies and Hilary Landorf.

A strength of the volume is the richness of perspectives, evidence from research in Canada, Australia, the UK, US, South Africa, Sweden and Indonesia. Examples include studies on training of teachers, relevance of global perspectives to children's literature, study of history and use of digital technology. A recurrent theme within the volume is the issue of terminology and relative merits of concepts such as global citizenship and global education. I found the chapter by Landorf and Feldman on reviewing the literature on global citizenship particularly valuable. Among the strongest chapters are those that review the curriculum and current debates in Australia, particularly in relation to changing political and educational priorities and how concepts can be interpreted and used.

Mags Liddy's chapter is the only one that brings in directly the debates within development education. She rightly poses the need for development educationalists to address politics and power. Whilst the volume has a number of merits, particularly in raising the profile and summarising examples of debates and practices on global education, it also has a number of weaknesses, some of which are recognised in the introduction. One of these is that despite the range of authors, the volume has very few non-Western examples of discussions on concepts and examples of research and practice of global education. For example, it would have been valuable to have seen some chapters looking at what concepts like global citizenship mean within discussions on education in South and East Asia and global education and related themes in sub-Saharan Africa. There is a lot of published material on these themes in a range of journals that have different starting points to many of the chapters in this volume including that of the role of social movements, the importance of indigenous knowledges and contribution of Eastern philosophies to global outlooks.

Another weakness of the volume is that because global education has come to mean so many different things, there is perhaps too wide a variation of topics and themes discussed particularly as each chapter is rather short. I also found a number of the chapters that claimed to suggest there was a lack of research on global education and global citizenship, notably Print, seemed unaware of the wealth of recently published research on these themes. For example, I am aware of about ten PhDs that have been published on global citizenship and global education since 2005, most of which have been followed up through books and academic articles. The impact of journals such as *Policy and Practice*, *Critical Literacy*, *International Journal of Development Education and Global Learning*, *ZEP* in Germany and other online journals in Spain and Portugal does not appear to have been recognised.

Global education in many countries has been heavily influenced by the desire of both policymakers and civil society organisations to secure greater understanding and engagement with global and development issues. The work of the Global Education Network Europe (GENE) and the European Development Awareness and Education (DARE) Forum and similar networks in the US and Japan have contributed to this. But none of the chapters make reference to the wealth of evidence that has come out from these bodies.

There are a number of common roots to conceptualisations of global education, for example Hanvey and Tye in the US, Selby and Pike in the UK and Canada, and also the European definitions, influenced primarily from discourses within development education. These roots are noted but the relationship between them and the influences of theorists such as Paulo Freire and, more recently, Henry Giroux are not explored.

Despite these criticisms, I still find the book valuable and an important addition to the discourse around global education. Most of the chapters are accessible and provide some valuable information and evidence. The questions posed at the end of the editorial on the need to encourage

greater debate on global citizenship and relevance to needs of national curricula are very important today. Many of the chapters demonstrate the value of global education to educational needs of societies and communities, and it is good to see reference to themes such as peace and human rights particularly in the volume.

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THE CHALLENGE OF SUSTAINABILITY: LINKING POLITICS, EDUCATION AND LEARNING

Review by Elaine Nevin

Hugh Atkinson and Ros Wade (eds.) (2015) *The Challenge of Sustainability: Linking politics, education and learning*, University of Bristol: Policy Press.

The concept of sustainability is a complex and contested one, often misunderstood or misinterpreted and because of its complexity requires the engagement of a wide range of stakeholders including politicians, educators and citizens on a local and global scale. And what does sustainable development look like anyway? This book highlights this complexity for us as well as outlining the challenges, difficulties and opportunities of engaging people in sustainability at many levels and the relationships between our political systems, the way we learn and education. Physically our environment is being degraded; our climate is changing, there is growing poverty and inequality; and even though this is the case, and the scientific evidence is there to show it, the great challenge of engaging people at all levels still remains. There is a need for a global response and a fundamental change in the way in which we do business. This timely book stresses the sense of urgency and the need for change to happen soon. There is hope provided with a belief that this fundamental change can happen and that we can ultimately live in harmony with our natural environment.

The contributors to this edited text provide us with an exploration of the interconnectedness of education, learning and politics. They highlight 'the need to challenge the current education paradigm; the realisation that the current neoliberal growth models are proving problematic and yet remain a strong influence in government policy' (6). Neoliberalism is also helping to shape formal education, both in the privatisation and the marketisation of the curricula, which in some cases is educating people for unsustainable development. It is also contributing to short-term politics and the lack of political will within our current systems to address the effect of high

consumption lifestyles on global ecosystems. And on the other hand, there are positive examples of governments, localities, education providers and citizens engaging with the sustainability agenda, at a local level both in policy and practice and it is these practical examples that show us that change and transformation are not only possible but are happening

The book is divided into four parts. Part One deals with challenges of sustainability, politics and education; Part Two looks at actions including case studies in politics, education and learning; Part Three looks at case studies from around the globe; and part four analyses future scenarios. In Chapter One, Hugh Atkinson highlights clearly the huge planetary challenges that exist today from climate change, environmental degradation, deforestation and poverty. He argues that we are in an age that many describe as the Anthropocene era, 'an argument that the impact of human behaviour on the planet over a consolidated period of time has been so significant as to constitute a new geological era' (11). He emphasises that the challenges we face are multi-faceted and, therefore, need a range of social, environmental and economic responses. He draws our attention to some of the positive actions that have taken place including recycling, fair trade and corporate social responsibility; there is also an abundant supply of renewable energy sources such as solar power but the missing ingredient is political will. Atkinson stresses the need for green societies, not just green economies and points to the importance of building on the many global agreements including the Kyoto Protocol on climate change and the Millennium Development goals (MDGs).

He points to the need for change in the psychology of politicians and voters and this is one place where Education for Sustainable Development (ESD) is needed. The politics of sustainability is the focus of Chapter Two and in it Stuart Wilks-Hegg asks if democracy 'represents part of the problem or the solution' for sustainability (43). He explores cases for 'green authoritianism' and 'green democracy' and concludes that there is really not too much democracy but too little. But within democracy there are challenges and no 'quick fix' (8); there is the challenge of getting politicians

to be honest with their voters on some of the unpopular measures that need to be taken to achieve sustainability including some sacrifice on the part of voters. Wilks-Hegg draws our attention to the short-termism of politics and how the long-term thinking and acting required for sustainability poses a challenge for politicians in 3-5 year electoral cycles. He concludes that we should look at incorporating some form of informed consent for citizens.

Ros Wade in Chapter Three explores learning, pedagogy and sustainable development, giving a comprehensive history of the inclusion of education and ESD in international agreements including the UN Decade of Education for Sustainable Development for which UNESCO has played a leading role. There has been progress in ESD, highlighting policy integration in countries such as Denmark, Wales and The Netherlands but this progress has been slow. She looks at the important role of non-governmental organisations (NGOs) and their successes in influencing government policy, in particular in the UK with the Centre for Environmental Education (CEE), Development Education Association (DEA) and WWF-UK. Wade emphasises the importance of non-formal as well as formal education sectors and the synergy between both and states that 'some might say that they [non-formal sectors] are even more important, as this is where ESD can be applied directly and more immediately to sustainability issues and problems' (78). Wade highlights that education is one of the largest resource commitments of the public sector and the increase of government control over the curricula. What we need, Wade stresses, are 'policy makers and politicians who are prepared to lead the debate … to reorient education systems towards sustainable development' (82).

Part Two deals with practical case studies from around the world, in particular the US and EU from a policy perspective. In both the US and EU there has been significant integration of environmental concerns into policy. For example, in the US there was a golden era of environmental policy between 1964 and 1980 with legislation such as the Endangered Species Act passed as far back as 1973 and the US Environmental Protection Agency (EPA) set up in 1970. However, since then the US has failed to engage with

the Kyoto Protocol and there has been, as Hugh Atkinson points out, a policy gridlock. However, the picture is more complex and there have been some positive examples coming from the US with President Obama speaking of excessive energy use by the US and the effect of this globally. There have been a range of new policies such as a new energy for America policy and a President's Climate Action Plan. Atkinson also draws attention to some local sustainability actions and initiatives such as the Green City Index in US and Canadian cities.

In Chapter Five, John O'Brennan highlights the EU as a global leader in the fight against climate change by promoting sustainable development and through significant achievements at a policy level including the integration of sustainability into policy levels across the EU member states. This, he explains, has been achieved in different ways and by the engagement of a multitude of actors across many levels. Jenneth Parker in Chapter Six, outlines the importance of action research as a tool for working with different sectors including the environment and the development sectors, dealing specifically with the convergence workshop and framework and 'its potential to be used as a "unifying framework" for sustainability practicioners' (5). Convergence is a concept developed during the Kyoto climate talks by Aubrey Meyer (2001) promoting global eco justice and supports equitable use of the Earth's resources by allowing a per capita allocation. This would have the effect of contracting use of CO_2 in the developed world whilst allowing for a greater amount of development in the global South.

Part Three begins with a chapter addressing some of the challenges to sustainability in Sub-Saharan Africa. It examines issues related to sustainable development and ESD through case studies from Uganda, Rwanda and Lake Malawi. The case studies consider: the importance of indigenous knowledge in the fishing industry in Lake Malawi; oil exploration and its effect on local communities, including environmental degradation in Uganda; and the importance of community-focused and child-centred education in Rwanda. The case studies show the interrelationships between

local and global issues, highlighting the important links between politics and education and the role of good governance, transparency, and peace and security in sustainable development.

Chapter Eight focuses on the Regional Centres for Expertise (RCE) in Education for Sustainable Development as a positive example of ESD in action and as agents of change as demonstrated through case studies of RCE Saskathcewan, Canada, RCE Greater Sendai Japan and RCE Greater Nairobi, Kenya. The multi-stakeholder UNU (United Nations University) accredited RCE network provides opportunities for universities, NGOs, local communities and businesses to work together on areas of common interest focused on sustainability which are location-specific and locally relevant and provide an opportunity to share this local learning through a global network. In Chapter Nine, John Blewitt gives us an insight into the relationship between people and urban space; highlighting that currently 'over half the world lives in cities' and 'that the "natural" world is predominately urban as is the global economy' (205). He describes the city as a 'product of capitalism trading in goods, services, natural materials and people' (206); within the city through technology, flashing imagery and other media we are actively encouraged into consuming more. Blewitt also emphasises the positives of digital and social media where it can provide opportunities for communal participation. He stresses the need to reclaim these urban spaces as public spaces if we are to achieve sustainability.

Part Four provides a synopsis of the challenges we are facing from 'traditional neoliberal growth models that are proving increasingly problematic for the people of this planet' (229). This section warns that there are no quick fixes to sustainability, that technology and ecological modernisation are just part of the solution and what we need is a change in the policy agenda to not just deal with economic interests but focus on social and ecological needs. It emphasises the important role of ESD and the need for the knowledge, skills and values that permeate ESD to be at the core of education for all. It recognises the need for transdisciplinary approaches and highlights the synergies between formal, non-formal and informal education

and the important role of each. This section stresses that what we need is 'vibrant and inclusive democracy at a local level' and 'a much more active citizen engagement and a well-informed public base' (232).

What will our sustainable future look like? What kind of society do we need to build in order to make a sustainable living? How can people and planet live in harmony? These are some of the questions asked in this book and we are challenged as readers to help find solutions. The book highlights the positive actions that are currently happening to support sustainability worldwide including the success of recycling, fair trade, the RCE movement, education for all, the incorporation of ESD into some national policies, the role of NGOs, child-centred education and community focused work. It also clearly outlines persistent challenges, including the neoliberal agenda that equates happiness with possessions, the need for a paradigm shift in our education system and a change in the way we do politics. The book leaves us in no doubt that these obstacles will be difficult to overcome but are alive with possible solutions. There is hope and the hope lies in a multi-pronged approach including politicians, educators, academics and citizens within education, learning and politics towards achieving sustainability. It also lies in incorporating the values of ESD in all education, the recognition that we need new forms of learning and not more of the same education. And we need to look at the quality and the kind of education that we are providing.

The hope is also that as humans we can imagine a present and a future world where we can live sustainably, recognising our connection to the natural world, to other species and to other people as Atkinson and Wade highlight. They conclude: 'Let us make this future our project. There is simply no alternative' (237).

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SUSTAINABILITY FRONTIERS: CRITICAL AND TRANSFORMATIVE VOICES FROM BORDERLANDS OF SUSTAINABILITY EDUCATION

Review by Vanessa de Oliveira Andreotti

David Selby and Fumiyo Kagawa (2015) *Sustainability Frontiers: Critical and Transformative Voices from the Borderlands of Sustainability Education*, Opladen: Barbara Budrich Publishers.

This book, edited by David Selby and Fumiyo Kagawa, presents fourteen chapters written by educators practicing in Asia, Europe and the Americas. In the introduction, the editors offer a useful definition of 'borderlands' as special spaces where:

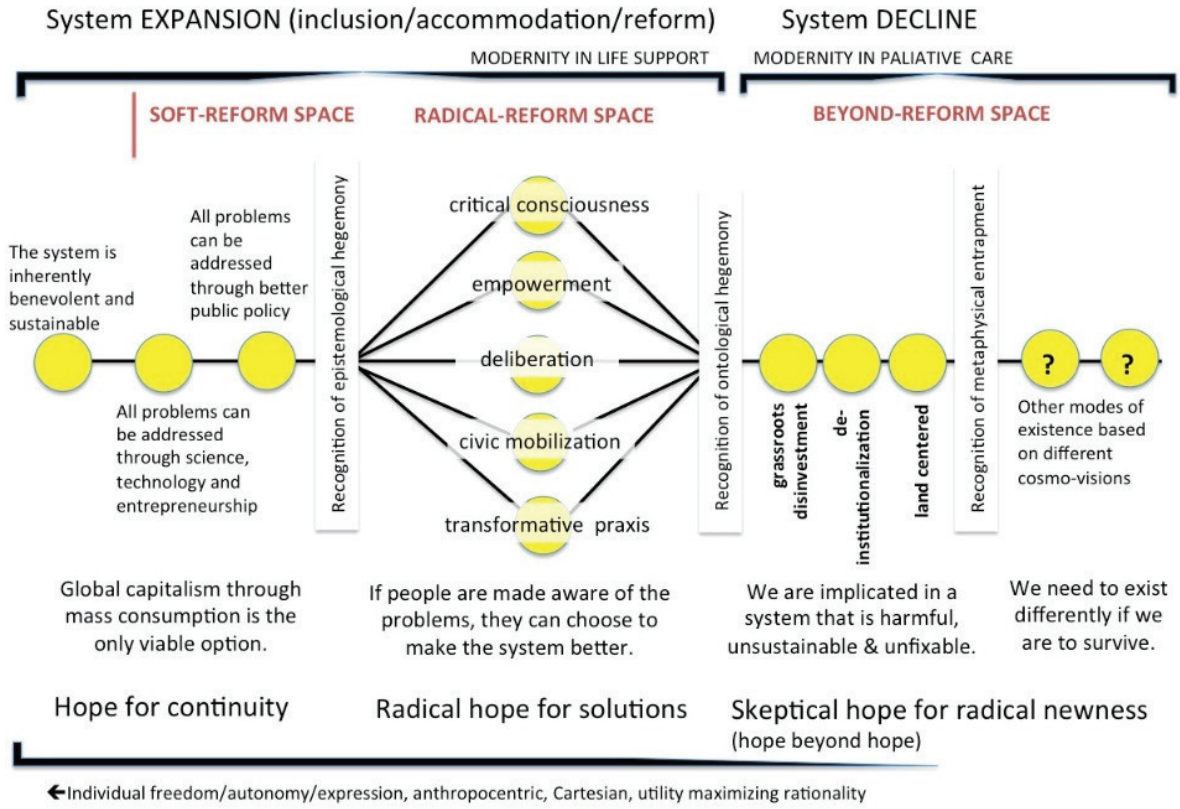
> "people go to emancipate themselves from the trammels of ingrained assumptions, orthodoxies, habits and practices, to escape the tentacles of overwhelming power and influence. They are shifting, mold-breaking spaces catalyzing the production of hybridized knowledge, understanding and insight. As such, they are spaces of resistance, reconfiguration and renewal. They are also uncomfortable spaces marked by alienation and discomfort with dominant culture and trends, and by processes of negotiation between those who are equally discomforted, but of different mind. In this space, ambiguity is to be lived with and worked through" (13).

The volume as a whole raises important questions that are also significant for development education: What are the borders of our thinking (about development, sustainability or education)? What desires inform and circumscribe the dynamics of reproduction and contestation within it? And how can we access that which lies beyond its realm of intelligibility? The different chapters/voices represented in this edited collection of essays reflect the hybridity and ambivalence represented in the editors' definition of borderlands. Some of my work in this area has also tried to offer social

cartographies about global change in education. These social cartographies illuminate tensions and differences that are often glossed over in attempts to prioritise measurable or 'feel good' educational results, especially in modern institutions like schools and universities. This instrumentalising tendency enforces a consensus that is averse to complexity, uncertainty and plurality, and that tends to reinforce systemic inequalities.

With that in mind, I re-constructed one of these cartographies of borderlands based on my reading of and responses to the texts.[i] The cartography I present in Figure 1 (which was best visually represented as a line, but which is not linear) shows three spaces of change in relationship to the wider phenomenon of (Enlightenment informed) modernity: soft reform, radical reform and beyond reform. Each of these spaces shows different clusters within them that represent attempts to respond to aspects identified as challenges to be overcome. Soft and beyond reform spaces are located within the framework of 'modernity in life support', while the beyond reform space is located within 'modernity in palliative care'. Modern subjectivities underscore each space to different degrees. The recognition of epistemological, ontological or meta-physical hegemonies mark the limits/borders of each space, and they characterise different borderlands.

Figure 1. Cartography of perspectives on social change



All the texts in the edited volume share a common critique. This critique points to the space of soft reform as the location of mainstream practices of sustainable development and education for sustainable development. In the first chapter, Selby argues that soft reform practices of sustainable development are characterised by a number of myths, including the myth of civilisation, linear upward progress, unending growth, human centrality, and rational, scientific and technological dominion over nature. In terms of propositions for change, each text speaks back from a different location within the radical or beyond reform spaces – or between the two. I have tentatively classified the chapters in the cartography according to whether the strategy for resistance proposed focused more on epistemological, ontological or metaphysical hegemonies.

Educational practices within the radical reform space propose solutions that centre knowledge, human agency, dialogue, citizen

participation, identity, and intellectual normative stances on ethics. Chapters broadly located in this space, written by Sauve, McCloskey, Kagawa, and Elshof emphasise the critical work needed to question power relations and change institutions from within. Educational practices that gesture towards dis-investment in modern desires, subjectivities and institutions are located in the beyond reform space. Chapters broadly located in this space, written by Gonzales-Gaudiano & Silva-Rivera, and Trellez-Solis, Judson, Kato and Garlick emphasise solutions that attempt to localise, de-institutionalise and re-centre bio- and ethno-diversity in their experimentation with a wide range of alternatives ranging from indigenous approaches to intercultural relations to having wild animals as teachers of emotional/environmental literacies. Chapter 14, written by McGregor, presents a helpful summary of seven initiatives of sustainable education with useful comments on topics such as chaos, paradigm shifts for uncertainty, knowledge hybridisation and integration, and fear, denial and hope.

The concluding chapter, written as a type of manifesto 'unlearning unsustainability' at the borderland, offers a list of drivers for learning that can re-orient discussions and practices. These drivers include 'must do' statements such as: the interrogation of the root drivers of the crisis of sustainability; challenging articulations that fuel a reckless disregard for people and planet; opening up to the pain of the world and to different possibilities of existence; moving beyond anthropocentrism, and modern institutions (if need be); amongst others.

As with any text, especially one situated at very specific borderlands, there are also gaps and limitations to what could be covered in the book, including contributions arising from different fields of study and modes of critique. For example, the premise that we need to 'unlearn' unsustainability still seems grounded on the notion that unsustainability is primarily perpetuated through the spread of flawed information, which can be excised and replaced by more sustainable knowledge and ethical frameworks. However, what if the problem is not one of misinformation and ignorance, but rather one of satisfaction (with the comfort, and illusions of certainty and

control offered by the current system)? If these satisfactions are linked not to rational calculations and practiced intentions, but rather rooted in unconscious attachments and desires, then unlearning may be important but inadequate to the task of existing differently on a finite planet. If we are taught to desire things that are harmful to other people, if we cannot fully rationally identify these desires and if we tend to deny that which will bring us face to face with our own complicity in systemic violence, what can education do to support people to desire (at an embodied level, beyond cognitive choice) something radically different?

This book offers an important starting point for broaching such questions in the field of sustainable development, particularly those focused on the need to pluralise different modes of being. However, this is only the start of the kinds of conversations that will be necessary if we are to address the relationship between the historical construction of our present and the political and existential necessity to open new possibilities for the future.

Notes

i) Two important caveats need to be highlighted. First, cartographies are not to be interpreted as normative or representational devices, but as pedagogical/ performative tools that can offer new ways of visualising a landscape/borderlands by shedding light on what has been normalised, what has been made invisible and what is perceived as 'too difficult to deal with'. Second, part of the pedagogical task of cartographies, once new visualities are established, is to point again to what the tool itself has made invisible, in a never ending exercise of subjecting our educational practice to on-going reflexivity, exploration and engagement with the limits of our thinking, doing and being.

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