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Audrey Bryan

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Pedagogy of the implicated: advancing a social ecology of responsibility framework to promote deeper understanding of the climate crisis

Audrey Bryan

School of Human Development, Dublin City University Institute of Education, Dublin, Ireland

ABSTRACT



This paper draws on Deborah Britzman's conceptualisation of 'difficult knowledge' and Michael Rothberg's figure of 'the implicated subject' to advance a Social Ecology of Responsibility Framework (SERF) in relation to the climate crisis. This framework demonstrates the impossibility of disarticulating individual, private actions that contribute to the ecological crisis from state-corporate climate-related harms. While not discounting differences of scale between individual actions and state-corporate crimes, the article highlights difficulties with binaristic approaches to climate responsibility which privilege *either* personal actions *or* macro-level norms, practices and ideologies. Foregrounding self-implication, the model serves as a basis for establishing transnational and transgenerational solidarity with human and other-than-human lifeforms who inhabit the Earth. The paper concludes with some examples of visual images and accompanying activities that can be used to prompt critical reflection on one's own positioning as an implicated subject and as a change agent who can contribute to the amelioration of global warming.

KEYWORDS

Climate change art; climate crisis; climate change education; difficult knowledge; implicated subject; ordinary harms; political responsibility; social ecology of responsibility framework; solidarity

Introduction: Climate Change Education as a Response to the Climate Crisis

As the consequences of global warming become more varied and widespread, the need for radically transformative, justice-oriented versions of climate change education (CCE) which have the capacity to disrupt business as usual policies, practices, and ideologies is increasingly felt (Mochizuki and Bryan 2015; Oberman and Sainz 2021; Waldron et al. 2020; Walker 2020). As CCE has only recently emerged as an 'adjectival education' in its own right (Læssøe and Mochizuki 2015), few pedagogical frameworks exist that simultaneously address the complex psycho-affective as well as political-economic aspects of the climate crisis. For example, very little emphasis has thus far been placed on the ways in which CCE can effectively address difficult knowledge related to learners' own involvement in, and contribution to, global warming. As scholarly inquiry into green criminology and questions of political responsibility for ecological harms evolve, the need for effective pedagogical models that can at once illuminate the complex chains and layers of personal and collective

CONTACT Audrey Bryan  Audrey.bryan@dcu.ie  School of Human Development, DCU, St. Patrick's Campus, Upper Drumcondra Road, Dublin 9, Ireland.

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responsibility – and the range of complex emotions this entails – becomes more apparent (e.g., Agnew 2013; Brisman and South 2019; Crownshaw 2019; Kramer and Bradshaw 2020; Rothberg 2013; Snaza 2020; Vanderheiden 2011; White 2018; White and Kramer 2015). This article seeks to address this gap in the literature by presenting a conceptual and methodological toolkit for educators that conceives of the climate crisis as a form of ‘difficult knowledge’, particularly as it relates to learners’ self-implication in the conditions that are being addressed (Britzman 1998; Britzman and Pitt 2004; Pitt and Britzman 2003). In order to illuminate more fully that aspect of difficult knowledge concerned with self-implication (Britzman 1998), I draw on Michael Rothberg’s *figure of the implicated subject* (Rothberg 2019). Rothberg’s theory of implication is concerned with how individuals contribute to, and benefit from, historical as well as present-day injustices through their positioning as ‘implicated subjects’ – rather than merely victims of, bystanders to, or the actual perpetrators of – various forms of wrong-doing (Rothberg 2019). This paper seeks to enrich and advance CCE scholarship by demonstrating the pedagogical and political potential of the implicated subject as a category that can shed light on the symbiotic relationship that exists between ‘ordinary’ climate-related harms committed by individuals, on the one hand (Agnew 2013, 58), and climate-related injustices caused by powerful institutions (e.g., governments; transnational corporations; the military etc.), on the other. Taking up Rothberg’s call for deeper theorisation of the complex relationship between subjective implication and systemic culpability (as quoted in Knittel and Forchieri 2020, 17), I respond to the commonly-voiced argument that an emphasis on individual complicity necessarily detracts from a robust analysis of state-corporate responsibility (e.g., McClanahan and Brisman 2015). While not discounting differences of scale between individual actions and state-corporate practices, this article maintains that pedagogical frameworks which promote deeper understanding of the complex ways in which individual acts and structural forces interact and mutually reinforce one another are needed more than ever, so that individuals can better apprehend their role in exacerbating and alleviating the climate crisis. The paper is also indebted to decolonial approaches to global citizenship education which call for the forging of closer links between global citizenship and environmental and sustainability education (e.g., Andreotti 2016; Pashby et al. 2020; Stein 2019; Stein et al. 2020). Decolonial approaches are valuable not least in terms of illuminating how citizens based in emissions-intensive societies can better apprehend their own complex entanglement in the wider structures that have produced the climate crisis and enhancing their sense of response-ability (i.e., their ability to respond to the conditions that have created this catastrophe in the first place) (Lobo et al. 2021).

Organisation of the Paper

The paper begins by outlining several features of the climate crisis that make it a quintessentially difficult form of knowledge, in Britzman’s terms, with particular reference to the question of *for whom* is knowledge of global warming difficult? Next, it seeks to illuminate complex entanglements between individual (subjective) and institutional or structural climate-related harms with reference to Michael Rothberg’s figure of the implicated subject (Rothberg 2019). The implicated subject stands at the centre of a Social Ecology of Responsibility Framework (SERF) that I develop next in order to promote deeper understanding of the symbiotic relationship that exists between

different systems and social actors who contribute to global warming. The SERF serves as the theoretical basis for the concluding section of the paper which comprises a series of practical engagements with visual representations of the climate crisis.

The Climate Crisis as a Form of Difficult Knowledge

Britzman's concept of difficult knowledge signifies the connections between traumatic curricular knowledge and the individual's psychic encounter with this content (Britzman and Pitt 2004, 354). Rooted in psychoanalysis, the concept of difficult knowledge illuminates the 'limits of pedagogy' and 'obstacles to learning' that socially traumatic knowledge entails (Britzman and Pitt 2004, 364) and addresses the role that psychic defences play in enabling us to *negate, resist, ignore or not know* certain truths about ourselves and the world that we inhabit (Britzman 1998; emphasis added).

Difficult Knowledge for Whom?

As societies experience and anticipate global warming's worsening effects, the mental health impacts of the environmental crisis are increasingly felt, particularly amongst young people for whom 'eco anxiety' has become a defining feature of their generation (Barbiroglio 2019; Pihkala 2020). Indeed, there is increasing recognition that pedagogical encounters with climate change are 'difficult' in the sense that they tend to evoke a range of emotions and defences including discomfort, guilt, anxiety, grief, despair, and various forms of denial (e.g., Garrett 2019; Kelly and Kelly 2020; Stein et al. 2020; van Kessel 2020). Because research on the affective dimensions of climate change is very much in its infancy, our understanding of the complex ways in which various climate-related emotions such as grief, anxiety etc. manifest across geographies, cultures, and demographics remains limited, as does our understanding of the long-term effects of ecological grief (Adams 2021). A burgeoning literature on the lived experiences of ecological grief and mourning amongst indigenous communities in response to environmental and species decline suggests that climate-related trauma is distributed unevenly and unequally – with those least responsible for the problem bearing the brunt of the pain. Some scholars have suggested that despite greater levels of concern about the climate crisis among Black, Indigenous and People of Colour (BIPOC), that those most likely to exhibit symptoms of climate anxiety are white – an anxiety that can be suffocating to those who have already had to endure the prospect of an unliveable future for centuries (Ray 2021). While acknowledging the uneven distribution of climate-related emotions – and the disproportionate impact that particular emotions can have for those who experience racism – this paper is primarily concerned with the climate crisis as a form of difficult knowledge for those individuals living in emissions-intensive societies, and/or those whose lifestyles are heavily dependent on fossil fuels, a majority of whom are located in the global North (Brand and Wissen 2021). While advancing a generalised framework that is applicable to those living in emissions-intensive societies, the model recognises that implication is unevenly distributed according to age, race-ethnicity, geographic location, gender, social class, lifestyle, relationship to climate activism etc. and that people engage with the climate crisis in radically different ways. Consequently, learning encounters with the climate crisis may be more or less difficult, depending on one's particular relationship

to – or understanding of – the problem, including the relative size of one’s carbon footprint. Variation in causal responsibility for the harms associated with climate change has, in fact, been a major talking point of the contemporary global youth-led climate movement. Greta Thunberg – one of the key figures of, and inspirations for, this movement – frequently reprimands older generations for their inaction in preventing climate catastrophe, strategically deploying her status as a child to highlight adult ignorance and denial in order to shame adults and world leaders into taking action (Murphy 2021). This youth-led movement has at once highlighted the political-economic factors driving carbon emissions, as well as the need for radical changes in behaviours that contribute to climate-related harm – behaviours that are often very difficult to change precisely because they are rooted in social norms and cultural practices that most, in the global North at least, consider to be normal or an entitlement. While many are encouraged by the example that young climate activists are setting and by the growing youth movement they have inspired, tackling the climate crisis has been likened to building a movement against oneself much like an abolition movement made up of slave owners or an LGBT rights campaign led by the Catholic Church (McKibben 2012). Theories of political responsibility for the climate crisis are premised on the notion that even if and as we aim to resist and reform the social forces causing the climate emergency, we cannot help but participate in, and benefit from, these forces, such that persons acquire at least minimal complicity in the resulting harm (Vanderheiden 2011). The idea that all those living in emissions-intensive societies bear at least *some* responsibility for the climate crisis forms the basis of the framework advanced in this paper. Having presented an overview of the climate emergency as a form of difficult knowledge, the next section elucidates additional aspects of the crisis that render it arguably *the* most difficult form of knowledge confronting humanity in the twenty-first century.

Business as Usual

In terms of its scale and severity, the climate crisis constitutes a major traumatic event, impacting practically all of the Earth’s activities and posing a major challenge, not just to planetary sustainability, but also to human beings’ ways of knowing the world and themselves (Brulle and Norgaard 2019, 14). Climate change is causing dramatic biodiversity and ecosystem decline. An estimated one million species of animals and plants are currently threatened with extinction (Díaz et al. 2019). Climate scientists predict with near certainty that the global climate system is rapidly approaching a catastrophic, irreversible threshold as a result of anthropogenic global warming (Zimmerman 2020). Meanwhile, the climate emergency’s interaction with other neoliberal and militaristic crises resulting in poverty, violence, conflict, food insecurity and mass displacement, constitutes a ‘catastrophic convergence’ (Parenti 2011, 7). Despite this catastrophic convergence and the threat of mass extinction, individuals, corporations, and nation-states continue to interact and influence one another in complex ways to preserve business as usual in political, economic and ideological terms. Fossil fuels are projected to control four fifths of the world energy market by 2040, and greenhouse gas emissions are expected to rise by over a third over the next 20 years, as the oil and gas industry use their influence to ensure that climate change mitigation remains voluntary and market-based (Boon 2019). In fact, efforts to curtail the production and sale of fossil

fuels by so-called ‘carbon major’ companies are continuously resisted by powerful vested interests, resulting in an international climate governance regime that exerts little direct pressure on an industry that is permitted to extract and burn fossil fuels in the full knowledge of their harmful effects (Boon 2019; Bradshaw et al. 2021; Díaz et al. 2019). As traditional oil and gas reserves become depleted, the fossil fuel industry has resorted to even more extreme extraction technologies and techniques in the pursuit of alternative sources of oil, coal and gas (Klare 2010). These companies often benefit from generous tax and regulatory incentives to discover and exploit new fossil fuel reserves. The risks, destruction and human rights abuses associated with extreme extractive practices such as offshore deep water drilling, mountaintop removal, fracking and the mining of oil (tar) sands is well documented (e.g., Kramer and Bradshaw 2020). Yet, very little action has been taken by states or international bodies to rein in these so called ‘dirty industries’ (White and Kramer 2015, 384). In fact, even as national governments champion the cause of climate change globally, they continue to facilitate and incentivise the expansion of oil, gas and coal operations locally, often because their nations’ economies, prosperity and ways of life are dependent on the continued recovery of carbon-based fuels (Leahy 2019).

The Climate Crisis as a Problem of Intelligibility

Bradshaw et al. (2021) argue that the scale of the threat posed by global warming is so great that even well-informed experts find it *unthinkable* and therefore hard, if not impossible, to grasp. With ice sheets in the Arctic and Antarctic oceans melting at an alarming rate, there is growing evidence to suggest that changes to the Earth’s systems could be far more abrupt than previously believed. Scientists have warned of the possibility of a domino-like ‘cascade’ of ecological ‘tipping points’ which would result in a rapid escalation of damage, thereby qualitatively altering the fate of the planet (Pearce 2019). The fact that scenarios such as these are literally *inconceivable* to many climate experts themselves has important implications for the *teachability* of global warming to non-expert audiences. Among the most challenging pedagogical features of the climate crisis, therefore, are its *imperceptibility* and *unintelligibility* (Nixon 2011). In other words, the ecological crisis poses significant representational challenges for educators who must find ways to allow for this unassimilable knowledge to be somehow imagined and spoken about. These perceptual and imaginative challenges raise significant questions about how best to *represent* the ecological crisis in ways that are *performative*, i.e., in ways that have the capacity to produce, and enable, change, and to transform the learner’s relationship with the planet.

Normalised Denial

The imagination’s inability to grapple with the scale of climate catastrophe is compounded by prevailing discourses of climate change which obscure the existential threat that global warming poses and contribute to ‘normalised denial’ of the crisis in public consciousness (Zimmerman 2020, 82). Enabling learners to apprehend, and work through, the complex constellation of conditions that produce these normalised patterns of denial that prevent many from taking action and responsibility for climate change is arguably

the most urgent task that climate change educators face. As a pedagogical and socially transformative project, difficult knowledge implicates the learner (Britzman 1998); it demands that they consider their 'ethical obligations' towards others who have suffered or who are suffering (Pitt and Britzman 2003, 756) by recognising themselves as implicated in the very conditions of their suffering. In foregrounding the complex ways in which individuals are implicated in the suffering of others, difficult knowledge opens up spaces where individual responsibility for climate-related harms and injustices can be *transfigured* into concrete actions and forms of solidarity (Rothberg 2019). While certain aspects of the global youth climate movement have been rightly criticised (e.g., Stein et al. 2020), the potential for this movement to forge long-distance solidarity should not be underestimated. The movement has been a proactive force in putting pressure on world leaders to commit to leaving carbon reserves in the ground and in highlighting the political-economic factors driving carbon emissions. Moreover, the radical steps that young activists such as Greta Thunberg have taken to minimise their carbon footprint have helped shine a light on the uncomfortable realities of human-induced global warming. The next section presents the conceptual underpinnings of a pedagogical framework that seeks to illuminate the complex chains of causal responsibility in consumer capitalist, emissions-intensive contexts. It seeks to explicate the multiple complex systems within which individuals living in emissions-intensive societies are embedded, and how their participation in these interacting systems implicates them in a progressively more harmful series of events, ranging from 'ordinary harms' (Agnew 2013, 58) to 'state-corporate crimes' (Kramer 2013, 153) and 'ecocide' (Higgins 2010, 63).

CCE as a Pedagogy of the Implicated (Subject)

As climate justice scholars and activists are quick to point out, those who have contributed least to the problem of global warming tend to be the most and worst affected by it, thanks to the temporal and geographical 'outsourcing' of greenhouse gas emissions to people and places who live thousands of miles (and years) from the emissions source (Nixon 2011, 22). Attributing responsibility for global warming has a labyrinthine quality to it, not least because its historical antecedents are located in the expansionist and industrialisation projects of the early colonial period and industrial revolution, when wealth expropriated from the colonies was expended on industrialisation (Sealey-Huggins 2017). Anthropogenic global warming is therefore the result of the historic actions of billions of people – actions that are inextricable from the larger ideologies and political-economic systems within which they were embedded. For example, the preservation of Northern prosperity and western lifestyles at the expense of lives and livelihoods in the global South is at least partially rooted in a sense of entitlement that has been shaped from the colonial era onwards. As White (2014) remarks: 'Hurting others does not hurt if the Others are deemed less than human, less than worthy, less than capable'. Similarly, Davies (2019, 13) persuasively argues that the outsourcing of environmental crises primarily (although not exclusively) to the global South as well as to a global Future persists because the lives being devastated by environmental pollution and degradation simply do not *count*. It is this failure to recognise their humanity which renders them highly vulnerable to environmental breakdown and ultimately expendable.

The Imperial Mode of Living

Brand and Wissen (2021) characterise the lifestyles and mindsets of those living in the emissions-intensive societies of the global North as an ‘imperial mode of living’ (IML) which they trace back to the colonial era. They develop IML as an analytical concept to capture how unsustainable production and consumption patterns are normalised and reproduced, not just through capital and State strategies but also through everyday practices, lifestyles and identities which rely heavily on: (i) the unlimited appropriation of resources; (ii) a disproportionate claim to global and local ecosystems and sinks; and (iii) cheap labour from elsewhere. Similarly, Agnew (2013, 58) identifies a multitude of ‘ordinary harms’ that individuals living in emissions-intensive societies routinely commit, including living in large, climate-controlled homes; driving gasoline-powered cars; consuming meat and frequently purchasing consumer goods. As Agnew (2013, 58) explains: ‘These ordinary acts have several characteristics: they are widely and regularly performed by individuals as part of their routine activities; they are generally viewed as acceptable, even desirable; and they collectively have a substantial impact on environmental problems’. Despite their ordinariness, these actions have a deleterious effect on the planet and its human and other-than-human inhabitants; they result in increased air, water, and soil pollution; the depletion of natural resources; the destruction of natural habitats and animal life; and are a major contributor to greenhouse gas (GHG) emissions. As Agnew (2013, 58–59) explains:

... a full understanding of environmental harm requires that we consider both the actions of individuals and larger groups, for they are symbiotically related. Ordinary harms committed by individuals provide much incentive for those state and corporate behaviours that contribute to ecocide, such as deforestation and the generation of electricity in coal-powered plants. At the same time, states and corporations encourage and facilitate the commission of ordinary harms.

Despite the major role that ordinary harms play in contributing to the climate crisis, their significance is often overlooked in discussions of responsibility for global warming. Some critics maintain that the emphasis on the need for individual behaviour change within environmental education and activism individualises responsibility, thereby deflecting attention from the wider policies and practices of governments and corporations that bear primary responsibility for the problem. These criticisms typically illuminate differences of scale between individual-level harms and those caused by states and corporations or regard individual actions as a *symptom*, rather than a *cause*, of global warming (e.g., McClanahan and Brisman 2015). This perspective stresses the need to ‘think institutionally’ about environmental problems on the basis that our capacity to challenge the institutions and structures which are culpable for large-scale ecological harms is undermined when individual actions and behaviours are privileged (Maniates 2001, 33). In the field of green criminology, considerable emphasis is placed on large-scale structures and entities that commit ‘state-corporate crimes’ (White and Kramer 2015, 385). Foregrounding those entities that have caused the majority of historic carbon dioxide and methane emissions is vital when one considers that almost two thirds of *all* GHG emissions have been produced by just ninety multinational and state-owned companies (Heede 2014). That at least *some* of these carbon majors – most notably

Exxon – were aware that ecological and social harm was a highly likely outcome of their actions as far back as the 1970s, makes their actions especially heinous (Kramer and Bradshaw 2020).

Moreover, nation-states are heavily dependent on fossil fuels for their global military operations. The US military is the largest single institutional consumer of hydrocarbons in the world (Belcher et al. 2020). Belcher et al.'s (2020, 65) analysis of the US military's 'carbon boot-print' reveals a vast logistical infrastructure that makes possible the procurement, distribution, storing, and consumption of the vast amounts of fuel required to carry out its global military operations. This vast infrastructure further supports the delivery of the energy needs of all US federal agencies, as well as multinational corporations, private contractors, and countries allied with the US.

While not diminishing the need to 'think institutionally' about the climate crisis, or to appreciate the lack of equivalence between harms caused by individuals and those caused by states and corporations, binaristic thinking that foregrounds *either* individual *or* institutional practices is inadequate as a means of addressing the complex connections between individual actions and larger structural forces. In other words, the either/or logic neglects the symbiotic relationship that exists between individuals and larger entities (Agnew 2013) and fails to appreciate the need for radical change within and across multiple scales and domains. More specifically, a lack of attention towards the 'ordinary harms' carried out by individuals blinds us to the ways in which these micro-level practices provide an *incentive* for states, governments, and corporations to perform *extraordinary* harms (Agnew 2013) and how these entities themselves facilitate individual, routinised harms. As Agnew explains, whereas the larger social, political, economic, and cultural environment *promotes* ordinary harms, most individuals themselves are enthusiastic *practitioners* of these harms. These ordinary harms in turn provide a *market* for much of the ecocidal behaviour committed by states and corporations (emphasis added). Almost a quarter of total GHG emissions for example, are derived from agriculture, forestry and other land uses, which are among the major contributors to global warming (IPCC 2019). Meat-rich diets are among the greatest contributors to global warming – contributing between 12% and 18% of total GHG emissions (Gomez-Zavaglia, Mejuto, and Simal-Gandara 2020). Furthermore, it is estimated that food production and the clearing of land necessary to meet increasing demand for meat-based diets could contribute to an 80% increase in global agricultural GHG emissions by 2050 (Tilman and Clark 2014). Tourism is another taken-for-granted activity that implicates ordinary citizens in the climate crisis. Between 2009 and 2013, tourism's global carbon footprint increased from 3.9 to 4.5 GtCO₂e, accounting for about 8% of global GHG emissions (Lenzen et al. 2018). Whereas an individual who commits ordinary harms is not responsible for the climate crisis in precisely the same way that as the CEO of a carbon major corporation is, as these examples suggest, individual actions cannot be disentangled from the larger institutions, systems and regimes that are driving the climate crisis.

Climate Change Education as an Invitation to Human Agency

Despite the scale of the carbon footprint generated by a whole host of normalised practices, '[t]he disconnect between the relative affluence and environmental benefits of the global North and the poverty and environmental degradation of the global South rarely takes hold in the minds and hearts of people in the former' (White 2014, 849). Any pedagogical framework that seeks to address the climate emergency comprehensively must, therefore, provoke learners to engage with the crisis from a position of non-innocence or *self-implication* (Andreotti 2016; Rothberg 2019) and must serve as an 'invitation to human agency' to respond (otherwise) to the crisis (Hariman and Luciates 2016, 93). Failing to foreground implication as the basis for climate justice and solidarity minimises the significance of ordinary harms in accounts of climate in/justice and downplays the political agency of billions of citizens (Hariman and Luciates 2016). Furthermore, it helps to perpetuate a 'politics of *indifference*' amongst 'ordinary' people towards those who suffer as a result of global warming by implying that these ordinary harms are relatively inconsequential (Davies 2019, 13; emphasis in original), when in fact these practices are collectively a major source of environmental degradation. The next section provides a necessarily brief overview of Michael Rothberg's theory of implication and its relevance to global warming and CCE, with a particular emphasis on the ways it 'foregrounds entanglements between subjects and social structures' (Rothberg 2019, 49–50).

The Implicated Subject

Rothberg's figure of the *implicated subject* helps to bridge the gap between 'individualising responsibility' and 'thinking institutionally' by enabling a deeper understanding of the myriad ways that personal, micro-level actions are deeply enmeshed in wider structures of injustice and inequality that perpetuate the climate crisis. As Rothberg (2019, 48) explains: '... to be an implicated subject is to occupy a particular type of *subject position* in a history of injustice or structure of inequality – a history or structure one may enter, like an immigrant, long after the injustice at issue has been initiated or, like a beneficiary of global capitalism, far from its epicentre of exploitation' (emphasis in original). Rothberg's theory provides a useful analytical framework for theorising our proximity to a myriad of social injustices by enabling us to think more deeply about our own involvement in, and connection to, both past and present inequalities. His framework explicates the ways in which individuals contribute to, and benefit from, historical as well as present-day injustices through their positioning as implicated subjects – rather than merely victims of, bystanders to, or the actual perpetrators of – various forms of wrong-doing. In other words, implicated subjects occupy a hard-to-pin-down position between victims and perpetrators that make them 'transmission belts' of domination (Rothberg 2019, 31). This imagery helps us to see the ways in which implicated subjects form part of a wider infrastructure or *machinery* that produces economic exploitation, political violence, and ecological degradation, without being merely 'cogs' in that machinery (Rothberg 2019, 200). Rothberg draws an analytical distinction between diachronic (historical) and synchronic (contemporary) dimensions of implication to account for the complex ways that that we are bound up in past as well as present-day injustices. He sees these two axes as inseparable. He further delineates *genealogical* and *structural* elements of implication, the

former involving a relatively more direct form of implication derived from a genealogical connection with prior injustices, such as being a descendent of a slave-owner. Structural implication, on the other hand, is concerned with how we are located in various social-structural hierarchies (along race, class, geopolitical lines etc.) and examines the ways in which prior systems of domination and oppression continue to shape present day relations and realities. In other words, it involves our participation in societies in which the legacies of past systems of oppression *still* matter, even if there are no direct or continuous lines of transmission that link us to that past. Rothberg explains that implicated subjects can be beneficiaries and *perpetuators* of systems that are not of their own making or that they have no direct ancestral attachment to.

[I]mplication does not require the continuities of genealogy or the intimacies of the family. Implication derives from those continuities and intimacies in some cases, but also especially from a structural position in relation to groups, classes, and modes of production that makes some people the beneficiaries of histories ‘not their own’ and disadvantages others regardless of their genealogical connection to the past (Rothberg 2019, 80).

The next section seeks to illuminate further the complex entanglements between implicated subjects and social structures with reference to a pedagogical framework that demonstrates the symbiotic relationships that exist between different systems and levels that make up a wider social ecology of responsibility for global warming.

The Social Ecology of Responsibility Framework (SERF)

The Social Ecology of Responsibility Framework (SERF) outlined in [Figure 1](#). takes inspiration from Urie Bronfenbrenner’s influential theory of the ecology of human development. Bronfenbrenner was concerned with the mechanisms, processes and conditions that shape individuals’ development and devised a model that theorises the reciprocal interactions that occur within and between different nested environments (or systems) which in turn affect developmental outcomes (Bronfenbrenner 1979). I have adapted Bronfenbrenner’s model to demonstrate how processes and conditions at different levels of the social ecology interact and inform one another in relation to the global climate crisis. Specifically, the SERF seeks to explicate the ‘symbiotic relationship’ that exists between micro-level, routinised acts and practices carried out by individuals (Agnew 2013, 58) and macro-level ‘carbon crimes of the powerful’ (White 2018, 95). The interdependence of the different sub-systems that make up the SERF is represented by multi-directional arrows.

My adaptation of Bronfenbrenner’s model locates the implicated subject at the centre of a series of nested and interrelated systems, ranging from the microsystem (the immediate contexts, relationships or organisations they interact with) to the macrosystem (societal and transnational structures; political-economic arrangements, cultural norms/values etc.). Other elements of the wider social ecology include the mesosystem, which describes points of connection or interrelationships between different elements of the various systems (such as relationships between families and schools for example), and the exosystem (those institutions, organisations or entities with whom individuals do not typically have direct contact in their day-to-day lives but which nevertheless exert considerable *indirect* influence over their lives). Each element of the

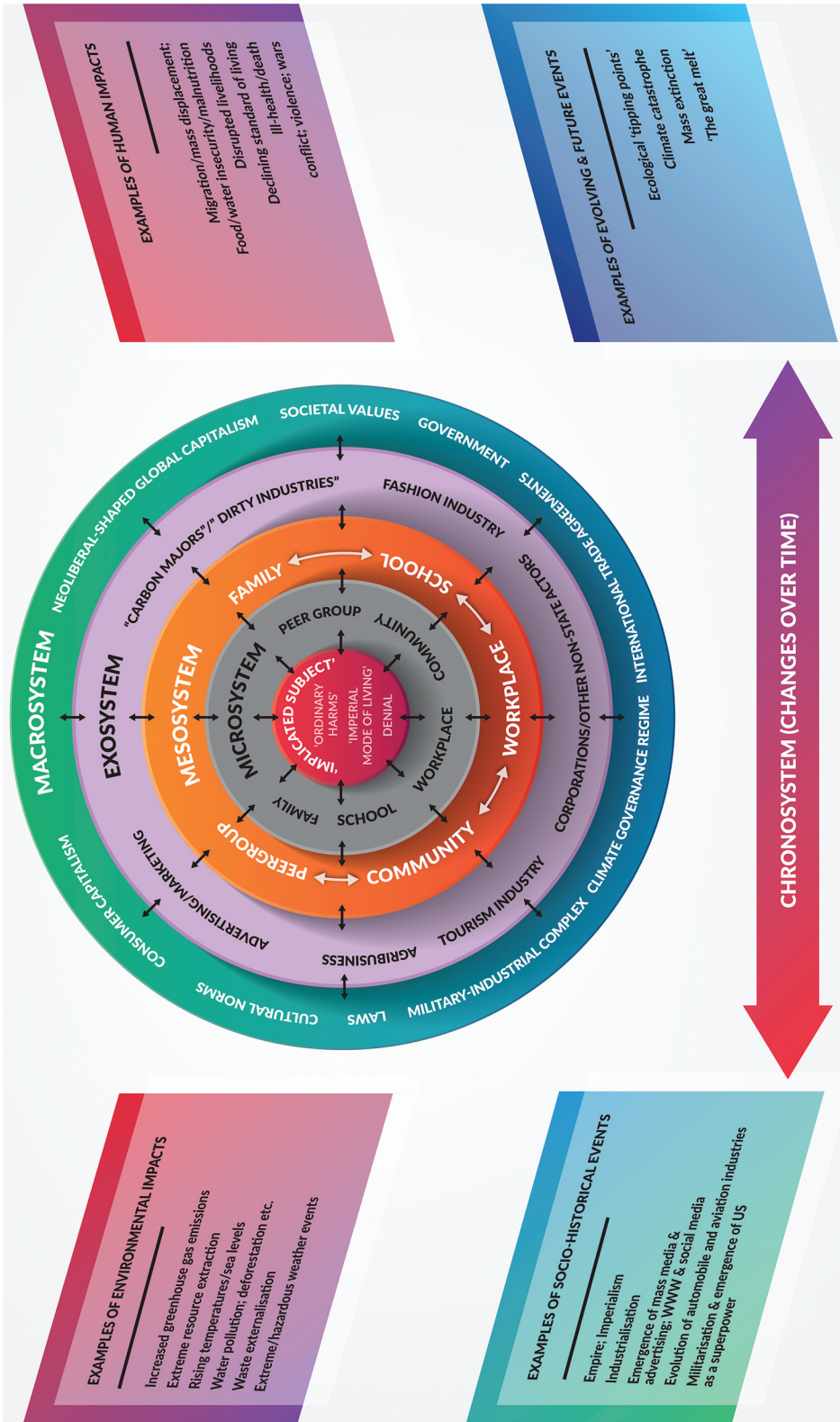


Figure 1. The Social Ecology of Responsibility Framework.

wider ecology allows us to visualise how individual, ordinary acts that are carried out in everyday settings are influenced by, but also shape, increasingly distal forces, and to appreciate the fluidity and interrelatedness of the system. The chronosystem, which Bronfenbrenner (1986) incorporated into his social ecology model as his thinking evolved, refers to socio-historical conditions and changes over time. The chronosystem therefore helps to trace both the origins of climate change to its imperial roots as well as to anticipate how the global Future will be impacted by changes to the climate system. It is represented in the form of a two-pronged arrow to denote the multi-directionality and multimodality of implication outlined in Rothberg's theory of political responsibility (diachronic and synchronic implication). Having presented the conceptual elements of the wider pedagogical framework, the remainder of the paper offers a series of methodological and practical insights into how to engage learners with their positioning as implicated subjects. I analyse a number of visual representations of ecological degradation in terms of their potential to advance our understanding of individual and collective responsibility and solidarity in the context of ecological implication.

'If we can't picture it, how can we act to prevent it?'

The last two decades have witnessed the emergence of new visual artistic and activist genres as well as a proliferation of photojournalistic images depicting various aspects of the climate crisis (McClintock 2020; Nurmis 2016; O'Neill 2020). As Anne McClintock (2020, n.p.) observes: 'Myriad artists and activists across the world are reaching for new ways to express the inexpressible, make the invisible visible, the unthinkable tangible and real' in relation to the unfolding climate catastrophe. Her rhetorical question: 'If we can't picture it, how can we act to prevent it?' has particular relevance for a climate emergency which is as much a crisis of perception and imagination as it is an existential one (McClintock 2020, n.p.). Visual representation of the climate crisis has been identified as an important, yet under-explored aspect of the politics of global warming (O'Neill 2020). As a consequence, the potential of visual imagery as a pedagogical tool to enable learners to work with and through difficult knowledge in the context of CCE is also under-researched.

The Apocalyptic Sublime Aesthetic

The 'great melt' of the Arctic due to global warming has been one of the primary subjects of climate change art produced over the last decade. Pianist and composer Ludovico Einaudi's breath-taking musical composition, *Elegy for the Arctic*, is one of the most widely known examples of this genre (See Figure 2). Commissioned by Greenpeace in 2016 as part of a wider campaign to *Save the Arctic*, Einaudi's performance has been viewed no less than 17 million times on social media in the last four years alone (McClintock 2020). Einaudi delivered his *Elegy* from a floating iceberg-like stage in the middle of the Arctic ocean, against a backdrop of cascading ice from the Wahlenbergreen Glacier in Svalbard, Norway. As the actual ice calves off and disappears into the sea as he plays, a visibly distressed Einaudi is moved to tears.



Figure 2. Acclaimed Italian composer and pianist Ludovico Einaudi performs one of his own compositions on a floating platform in the Arctic Ocean, in front of the Wahlenbergreen Glacier (in Svalbard, Norway). Copyright: © Pedro Armestre/Greenpeace.

Climate-related art which has the ability to generate large scale public interest and engagement in the ecological crisis has a vital role to play in its amelioration. However, artworks that are as elegiac and affecting as *Elegy for the Arctic* arguably fail to alter the audience's subjectivity in respect of their sense of responsibility *for*, and indeed response-ability *to*, the climate crisis (Lobo et al. 2021). As the foregoing accounts of difficult knowledge and the figure of the implicated subject suggest, in order to alter business as usual, pedagogical and artistic resources must implicate us in the very conditions of the climate crisis. Joanna Nurmis's analysis of climate change art reveals the preponderance of an 'apocalyptic sublime aesthetic' in images representing or concerning ecological breakdown (Nurmis 2016, 510). Nurmis is critical of this tendency to depict images, scenery or objects that are as breath-taking as they are remote and unfamiliar to their intended audience because it enables them to 'linger in a blissful state of nostalgic contemplation of that which is not yet lost, but inevitably will be' (Nurmis 2016, 512). From this vantage point, climate catastrophe's inevitability becomes a self-fulfilling prophecy, a *fait accompli*, in a world that no longer seems worth fighting for. Moreover, the apocalyptic sublime aesthetic positions viewers as mere *voyeurs* or *passive spectators* – rather than active *agents* or *implicated subjects* – in the unfolding chaos. It has the cathartic effect of allowing them to experience the beauty and/or the brilliance of the work and to feel that they care deeply about the environment, without ever having to apprehend their own participation in its destruction or amelioration. Nurmis rejects this apocalyptic sublime aesthetic in favour of artworks which have the capacity to reconfigure the viewer's relationship with the planet, a process which involves being able to apprehend one's role as an 'unwilling perpetrator' of injustice. As Rothberg (2019, 145) explains, this recognition 'represents

a necessary, if not sufficient, condition for a disengagement from implication and the construction of solidarity with those who suffer directly from our indirect entanglements'. Apprehending our role as unwilling perpetrators requires a nuanced understanding of how individuals' 'fossil fuel soaked lifestyles' in emissions – intensive societies are located within a wider ecology of responsibility comprising a myriad of social actors, norms, institutions, ideologies, conditions, and processes which are collectively involved in the production and intensification of the climate crisis (Daggett 2018, 29). The remainder of the paper offers some examples of visual images, pedagogical narratives and activities that can serve as the basis for individuals' critical reflection on their own complex subject positions in relation to global warming.

'We Are All BP Now'

Writing in the aftermath of the *Deepwater Horizon* oil rig explosion off the Louisiana coast in 2010 – which killed 11 people, injured many others, and caused hundreds of thousands of seabirds to lose their lives – Anne McClintock observed 'We are all BP now' (McClintock 2010, n.p.). Photojournalistic images which circulated in the wake of the oil spill captured the tragedy of countless birds whose feathers became coated in oil – causing them to become stressed, hypothermic, exhausted, dehydrated, and to eventually drown. Hariman and Luciates's (2016) analysis of one such image – that of a visibly shocked, severely damaged (and tragically named) laughing gull – helps to give tangible form to those aspects of Rothberg's theory of responsibility concerned with the 'ecological' (Rothberg 2019, 74) and 'affective' dimensions of implication (Rothberg 2019, 120) (See Figure 3). While evoking the discourse of 'complicity' rather than 'implication', Hariman and Lucaites's account is worth presenting in some detail, not least because it speaks to the impossibility of disarticulating personal from more structural forms of responsibility and locates the implicated subject at the centre of the contemporary ecological crisis in emissions-intensive societies.



Figure 3. A laughing gull is mired in oil on the beach at East Grand Terre Island along the Louisiana coast after being drenched in oil from the Deepwater Horizon oil spill, Thursday 3 June 2010. Copyright ©AP Photo/Charlie Riedel.

Hariman and Luciates (2016, 85) suggest that the close up nature of the shot – and its corresponding lack of context – serves as an invitation to critically reflect on one’s own role in the catastrophe and to refocus or ‘recontextualise’ the concern beyond the merely human costs of the disaster. They suggest that while the viewer may initially flinch and pull away from the disturbing image, they are nevertheless compelled to return to it in order to feel their way into ‘the very depths of the picture’ and to gain deeper understanding of ‘not only the bird’s catastrophe but also how it is the moral centre of a much wider indictment’ (Hariman and Luciates 2016, 87). The laughing gull’s capacity to awaken our moral sensibilities comes about because of its dignified refusal to give up, despite being immobilised by a thick sludge that engulfs its entire body. As it peers out through its oil-soaked eye, it hails us as if to say ‘If I refuse to give up on the world, then what excuse do you have?’ Moreover, its oil-drenched body holds a mirror up to our own ‘fossil-fuel soaked lifestyles’, forcing us to consider the impact on those who are most vulnerable to, and least responsible for, their devastating effects (Daggett 2018, 29). Hariman and Luciates (2016, 86) articulate the power that this image has to ‘urge us to look inward, to see ourselves lurking in the image somewhere’, prompting us to recognise that ‘although BP is culpable for the catastrophe in the Gulf of Mexico, the responsibility for the bird’s quandary is not BP’s alone’ and that ‘everyone who depends on the use of petroleum and oil by-products is complicit in the system of production’. Their analysis of the emotional response that the image evokes is closely related to Rothberg’s notion of ‘affective implication’ (Rothberg 2019, 120) whereby strong emotions have the capacity to connect us to apparently distant crises and to wider systems of injustice. As expressed by Hariman and Luciates (2016, 86–87)

What we see in the photograph, then, is an image of ourselves. The negative affect we experience in viewing the photo can include implicit recognition of modern society’s waste, impurity and carelessness. This emotional reaction can do something too rarely achieved in public discourse of energy and environmental policies: fuse individual and collective responsibility. The muck that looks like liquefied shit is the waste product of a civilisation, and there is no way to pretend that it doesn’t exist or that all aren’t caught in a wide spill of obligation. The trapped bird signifies a skein of social relations, it locates both harm and change in the everyday world, and it creates an empathic bond that is essential for democratic communication.

Practical application

The framework and visual resources alluded to above could be used as a springboard for discussion about self-implication in structural, climate-related injustices. For example, the SERF could inform a mapping and subsequent brainstorming exercise undertaken by participants in relation to different practices and belief systems that fuel consumerism which would enable them to trace complex connections and patterns across different levels of the ecological system. An initial mapping exercise could be undertaken to explore how forces operating at the level of the exosystem – such as the advertising industry, sophisticated marketing strategies, business models premised on fast fashion and planned obsolescence etc. – fuel in/conspicuous consumption practices among individual consumers (microsystem), resulting in the intensification of GHG emissions, water pollution and the externalisation of waste to the global South. This activity could be further supported by climate change imagery that prompts critical self-reflection on the

complex and profound ways that consumerism implicates us in the climate catastrophe. A particularly striking visual example of this is Bahia Shehab's 'Pyramid of Garbage' installation in Cairo, home to the pyramids of Giza (See <https://www.bahiashehab.com/public-installations/pyramids-of-garbage>). Shehab's installation – which juxtaposes the majestic eternity of the pyramids of Giza with the ugliness and enormity of consumer waste – confronts audiences with the possibility that their legacy can be directed either towards building a sustainable future or towards building a pyramid of garbage (Shehab 2021, n.p.). This mapping and self-reflection work could then be followed by a brainstorming activity to identify specific actions that participants see as most desirable and/or possible within their individual and collective remit in the short and longer terms.

Conclusion

Summarising the extent of the changes needed to avert 'a ghastly future' and to combat the powerful vested interests seeking to preserve the existing political-economic *status quo*, Bradshaw et al. (2021, 6) remark that:

[T]he gravity of the situation requires fundamental changes to global capitalism, education, and equality, which include *inter alia* the abolition of perpetual economic growth, properly pricing externalities, a rapid exit from fossil-fuel use, strict regulation of markets and property acquisition, reigning in corporate lobbying, and the empowerment of women.

The gravity of the situation further requires a robust pedagogical response that can articulate the complex fusion of individual as well as state-corporate forms of climate-related responsibility. Provoking learners to engage critically with their own complex entanglement – or implication – in transnational and transgenerational relations of ecological harm is extremely challenging. It is challenging, not least, as Rothberg (2019) explains, because implication can operate at multiple levels of awareness, and does not require consciousness of one's entanglement in injustice. That is, one can disavow their responsibility for climate-related injustices yet still be implicated in them. Moreover, as Snaza (2020, 23) observes, it can be extremely difficult to 'attune' to implication, precisely because there is a vast infrastructure comprising educational institutions, corporations, and legal structures which works to render it imperceptible to us. The sheer scale, scope and severity of the harms that individuals must bear responsibility for, combined with the complexity of the dynamics that operate within and across different levels of the social system to produce multiple and mutually reinforcing harms, can overwhelm us.

However, it could be argued that it is only by bringing into conscious awareness the complex dynamics and ecology of implication that meaningful solutions to the climate crisis can begin to reveal themselves. Numerous scholars have argued that we need to attend to what our negations, resistances and denials etc. in the face of 'difficult knowledge' are telling us (e.g., Garrett 2017) whereas others have presented models for interrupting various different levels and forms of denial (e.g., Stein et al. 2020). The ultimate challenge for CCE is to scaffold learners in apprehending their role in the existential threat of global warming, while at the same time not foreclosing possibilities for action and amelioration. This means taking seriously the complex emotions and psychological dynamics that lie at the heart of

the difficult knowledge that these forms of education entail as well as deepening our understanding of how difficult climate-related knowledge is experienced, negotiated and resisted. The conceptual and practical toolkit presented in this article comprises a social ecological model of responsibility that demonstrates the impossibility of disarticulating individual, private actions from state-corporate climate injustices as well as a set of ideas for how to approach questions of self-implication drawing on environmental imagery. This is a small, but hopefully useful step towards building robust models of CCE that are at once pedagogically as well as politically efficacious.

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