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editorial: education in the anthropocene

On Education

Scientists from various disciplines have announced a new phase in earth history: the Anthropocene. What they are suggesting, to be precise, is that somewhere in the (relatively) recent past (when, exactly, is a subject of heated debate) we have entered a new geological epoch, characterized by humankind's unmistakeable and profound influence on the earth system.

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Scientists from various disciplines have announced a new phase in earth history: the Anthropocene (Crutzen & Stoermer, 2000; Zalasiewicz, 2008). What they are suggesting, to be precise, is that somewhere in the (relatively) recent past (when, exactly, is a subject of heated debate) we have entered a new geological epoch, characterized by humankind's unmistakeable and profound influence on the earth system.*1* Signs of this influence are, to give just a few examples, rising atmospheric CO^2 and other greenhouse gas levels, increasing ocean acidification, deforestation, and loss of biodiversity.

Some effects are dramatically visible. In a study published June 14th 2018, scientists report that the Antarctic Ice Sheet is melting faster than ever, three times as fast as a decade earlier (Mosbergen, 2018; Shepherd et al., 2018). If the projected sea level rise this may cause (6 inches by 2100) does not sound too threatening for some, it is still a clear sign of what is going on: anthropogenic climate change, with possibly already irreversible effects. Almost exactly a year earlier, American president and climate change skeptic Donald Trump announced the United States' withdrawal from the 2015 Paris Agreement on the mitigation of climate change, arguing that the accord is unfair to the US (as compared to China and India), undermines the US economy and weakens US sovereignty (Zhang et al., 2017, p. 221). A possibly even bigger concern, however, is that even if all signatories to the Agreement made good on their promises, it would still be far from enough to keep global temperature rise 'well below 2 °C' (Rogelj et al., 2016). Given that China's Paris commitment is that the country's CO^2 emissions will peak in 2030, to give just one example, this is hardly surprising (https://climateactiontracker.org/countries/china/). (After a brief lull from 2014-2016, China's emissions are now rising rapidly again; Boren & Lammi, 2018.)

Meanwhile, the general consensus among scientists as well as governments worldwide is that anthropogenic climate change is both a fact and a serious problem. The IPCC (Intergovernmental Panel for Climate Change) writes: "Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems" (IPCC 2014, p. 8). The report suggests various possibilities for mitigation and adaptation, remarkably enough mentioning

educational options such as 'awareness raising & integrating into education' among the latter (adaptation options) only (ibid., p. 27). A 2014 UNESCO paper makes stronger claims for the importance of education: '[T]he international community has yet to recognize the full potential of education as a catalyst for development', 'Education increases environmental awareness and concern', and: 'Education helps change behaviour by making citizens more engaged' (UNESCO 2014).

Climate change is just one (multifaceted) aspect of the global environmental problematic that currently typifies the Anthropocene. Other environmental problems are various forms of pollution of land, water, and air, overfishing, deforestation, destruction of ecosystems, extinction of species of animals and plants, and soil degradation. Since all of these are anthropogenic, i.e. caused by human behaviour, both individual and collective, it stands to reason that some form of environmental education could and should be part of any attempt to (begin to) solve or deal with these problems. And indeed, many authors have suggested precisely that. Michael Bonnett (2004) has argued that what is needed is a change at the 'metaphysical level', the level of our most basic understandings of nature and our relation to our environment. In a similar vein, Ron Miller, David Orr, David Purpel, C. A. Bowers and others have argued for 'holistic education', "an emerging paradigm (…) that emphasizes wholeness and integration in the learning process, a nourishing and democratic community both inside the school and without, a global and ecological perspective on social and economic problems, and a recognition of the spiritual dimension of human existence" (Miller, 1998, p. 10). And some now say that the Anthropocene demands a new form of education (e.g. Olvitt, 2017, Stein, 2014).

So far, however, environmental education has not been a priority in education systems across the globe – and perhaps least in those countries with the largest ecological footprint (such as Western countries and China). (Short-term) economic concerns tend to take precedence over (relatively long-term) environmental concerns. Yet differences of opinion on important questions regarding environmental education may also partly explain its marginality. These questions may be summarized under the headings of *necessity*, *form and content,* and *justification*.

Firstly, it is perhaps not uncontroversial that environmental education is *necessary* to make the change to a sustainable form of living. Techno-optimists may believe that the solution lies elsewhere, in technological innovation – so if education is to play a role, it is in creating technological innovators, not green citizens (Lomborg [Ed.], 2010; Lovins, 2011; Wagner, 2012).[2] Others may not place all their hope in technology but still feel that was is needed is *societal* change (e.g. changes in economic institutions, in modes of production, levels of consumption). Education may follow these changes without being an agent of change itself. So the first question is: Is environmental education necessary?

The immediate follow-up question is: If so, what kind of environmental education? This is the second issue, that of *form and content*. Agreement on the question of necessity may evaporate as soon as the how and what are discussed. It is not very helpful if people merely agree that *some form* of environmental education is necessary; without a more substantive agreement on what this should look like, we are still at a stalemate. That opinions are divided is evident already from the different terms in circulation: 'environmental education', 'ecological education', and 'education for sustainable development' are just three of them. Should environmental education (here used as an umbrella term) be transformative in the sense explained above, or is it enough to focus on knowledge and understanding? In other words, should we educate *about* or educate *for* the environment? If the

latter, what exactly should we aim for? What kind of human-environment relationship are we envisioning? And what should this environmental education look like, both in form and in content? Can it be incorporated in the existing educational system and traditional forms of schooling, or does it require a radically different approach?

Thirdly, in possible tension with the necessity of or need for environmental education, as well as with some proposed forms of environmental education, is the question of *justification*, which is especially pertinent in liberal-democracies. It seems that if environmental education is to be effective as an agent of change, it has to be transformative, i.e. not just inform children but change children's attitudes, feelings, and desires and thereby the choices they make in life. If governments were to make this a compulsory part of education in all schools, the question arises whether this would amount (in the terms of liberal political philosophy) to the promotion of a particular comprehensive doctrine or conception of the good life – in other words, whether it would conflict with liberal (state) neutrality. Opinions differ on this issue (Bell, 2004; Ferkany & Whyte, 2013; Hailwood, 2005; Postma, 2002; Schinkel, 2009), and it is certainly conceivable that governments' hesitancy to act more firmly on this matter has to do with a sense that convictions and attitudes with regard to the environment are a private matter.

The contributions to this issue of *on_education* each tackle one or several of these pressing issues. First, in *Education in the Anthropocene: A pragmatic approach* Randall Curren and Ellen Metzger take each of the above questions head-on. They propose that environmental education requires a 'profound reorientation' of education, involving four key ideas: the 'cultivation of good practical judgement'; an 'integrated, multi-disciplinary, systems-based approach'; instruction in principles of sustainability ethics; and the combination of the above in 'collaborative, civic, project and problem-focused learning'. And they argue persuasively that such environmental education is both necessary and justifiable within the constraints of liberal neutrality.

In the second contribution, *Interpreting the idea of the Anthropocene, and its relevance to education*, Michael Bonnett addresses the need for environmental education and particularly, on a fundamental level, the question of its content, asking "what would be a 'right' relationship with nature and how do we best 'know' nature?". Central to Bonnett's answer is the idea of nature as intrinsically valuable and as 'self-arising', as having a 'self-arising otherness': nature exists independently of us and reveals itself only (partially) when we are open, attentive, and responsive to it. It is this frame of mind, rather than a reductionist way of perceiving nature, that environmental education should foster.

Next, in *Why solving intergenerational injustice through education won't work*, Hanno Su and Shia Su challenge the call for (better) environmental education, arguing from an Arendtian perspective that we should beware of using the next generation to solve problems we ourselves have created. Rather, we should shift our focus from the educated to the educators and take responsibility for our *own* behaviour, doing what we can to enable the next generation to live a life of their own.

In the fourth contribution, *The Anthropocene: Becoming-imperceptible of (environmental) education*, Lesley Le Grange argues, on the contrary, that the Anthropocene requires a fundamental rethinking of (environmental) education. An ecologically responsible way of life for human beings requires (much as Bonnett argued, but differently conceptualized) recognition that 'nature' is not just the correlate of our thinking but has substance and agency in itself. Moreover, it requires (in Braidotti's terms) 'the death of the self' – the anthropocentric, inflated self that aims to control nature – and therefore also 'the death of education' as we know it, the kind of education that creates the self we

need to abandon.

The fifth contribution, Kai Niebert's *Effective sustainability education is political education*, addresses the question of the form and content of environmental education from an empirical perspective. The available evidence on the effectiveness of various environmental education programmes shows that any significant effects tend to be cognitive only, and that values and behavior remain unchanged. Furthermore, other empirical evidence suggests that the link between pro-environmental attitudes and pro-environmental behavior is weak. Niebert therefore recommends that we shift our focus towards *political* education, since it is in the realm of politics, not individual behaviour, that the decisions necessary to begin the transition towards sustainability need to be made.

The issue concludes with Marie Brennan's *Changing teaching and teacher education in the 'Anthropocene'* – a fitting conclusion, since if education needs to be reconstructed, so does teacher education. Brennan argues that teacher education is particularly well-placed to contribute to the changes that the Anthropocene demands, not just because it shapes the outlook and pedagogical approach of those who will in turn influence children's outlook on the world, but also because it forms a bridge between different institutions, in particular universities and schools. That position also creates difficulties in the form of conflicting demands. Part of the challenge for teacher educators is to refuse to comply with demands that erode the purposes of education.

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1. For an overview of the debate around the concept of the Anthropocene and its precise definition see Lewis and Maslin, 2018.
2. I take the term 'green citizens' from Bell (2004).