Introduction

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Envisioning Futures for Environmental and Sustainability Education invited educational practitioners and theorists to speculate on – and craft visions for – the future of environmental and sustainability education. This volume explores educational methods and practices that might exist on the horizon, waiting for discovery and implementation. Throughout this project, our authors were concerned with how the collective project of imagining alternative futures might help us rethink environmental and sustainability education institutionally, intellectually, and pedagogically. Contributors used emerging modes of critical speculation as a means to map and (re)design the future of environmental and sustainability education today.

The future of environmental education is an urgent question in the larger context of the Anthropocene, the geological epoch in which human activities have become the dominant driver in the ongoing evolution of Earth's biosphere. Our contemporary ecological moment is characterized by complexity, uncertainty, and 'accelerating change' (Wals and Corcoran 2012). While the global impact of anthropogenic climate change is undeniable, the pace of temperature and sea-level rise depends on ecological feedback loops that are not fully understood – and which may be increasing the rate of biosphere destabilization (Hansen *et al.* 2015). From a social perspective, the Anthropocene is an age of what humanities scholar Rob Nixon (2011) terms 'slow violence,' or ecological violence and environmental injustice that occurs on spatial and temporal scales that are hard to understand or represent, most often against the world's poorest peoples. In light of such developments, educators need strategies for anticipatory engagement with changing socio-ecological realities – both in the present and future – in order to be effective within their various embodied contexts. This volume explores how environmental educators can engage in imaginative mapping concerning large scale global processes, as well as create useful, situated knowledge for dissemination within their respective socio-ecological contexts.

Envisioning futures

In *Future shock*, Alvin Toffler wrote 40 years ago about the social paralysis that comes with rapid changes where people cannot keep up with the times. Rapid technological and social change leaves people disconnected and in a state of 'shattering stress and disorientation' which he referred to as 'future shocked' (Toffler, 1970). Today we not only witness accelerating technological change, which is nowadays compounded by hyper-connectivity, social change, hyper-migration,

in part as a consequence of climate change, but we also are facing rapid ecological decline. Essentially we are in a state of global systemic dysfunction (Lotz-Sisitka *et al.* 2016). Lack of place, identity, psychic numbing, and a loss of agency are only a few consequences humans are suffering, not to mention the consequences suffered by the non-human world of plants, animals, and other living beings. A question for educators and those seeking to reclaim some kind of balance, meaning, and belonging in our existential quest on this planet is whether we can slow down, reflect, and re-think. More specifically, can we reclaim the future as it seems to spin out of control?

The future seems like a runaway train. American media-theorist Douglas Ruskoff, in a fascinating interview on Dutch Television, talks about reclaiming the 'now' (VPRO Tegenlicht 2014). He argues that we are no longer leading the life we want to have but that our lives are predetermined by the electronic cookies we accept which eventually and subtly influence the choices we are to make out of the overwhelming number of options that billions of people have nowadays. As a result, we do not live in the 'now', but live in the 'near future': as soon as we try to just 'be' or try to become connected with a place or with someone or something, we are distracted by our so-called 'connectivity' to the world-wide-web of temptations. Our 'body-glued' technologies demand us to go somewhere else, to go check something, to get something, to become something. There is little time to be bored, to ponder, to stare, to wonder, to mull things over, to sink deeply into a book, to gaze at the stars, no time to reflect at length on things that really matter and make us human. In order to think about a sustainable future, we need to be able to pause, think, and imagine.

'Envisioning sustainable futures' is the subject of this book. It brings together a particular group of people from various places with it different histories but with a common concern that the futures they see, especially those that are based on an extrapolation of current trends, are not good ones. They also have in common the idea that education and learning in one way or another can help create a better future. But not just any type of education. Some of the unhealthy trends in society can be seen in our education. Looking at the current educational system can help explain why humans have become who we are, and why it might not produce the kind of learning needed to change who we are and what we are becoming.

The notion of 'envisioning futures for environmental and sustainability education' raises many possibilities and questions. We can pause and think more about the meaning of 'envisioning'. Envision*ing* suggests an active process that leads to some kind of image or vision of what *is*, what might *be* or even what *was*. Envisioning a future can be seen as a reasoned imagining, an educated semi-fictional sketch of what might be. We can engage many people – young and old, rich and poor, living

in disaster prone and fragile regions or in more stable ones – in such envisioning and see what kind of commonalities and differences might emerge. Envisioning can become a bridge among binaries, polarization, and separation and open up the spectrum between hope and fear, survival and extinction, climate change resilience and runaway climate change, between coming together and survival of the fittest.

Likely these visions are influenced by who you are, where you are, where you have come from, where you are going. A rich collage of possible futures will emerge that can become the beginning of a conversation about probable, possible, and desirable futures. What does the word 'desirable' or, for that matter, 'sustainable,' mean to different people who envision such futures? Still other questions might be raised about why some futures are more probable than others or what influences the change toward a more desirable future. If we do agree on an alternative future, then questions about how to get there – sometimes referred to as backcasting (Holmberg and Robert 2000) – also need to be asked. Who needs to do what, when, and how? What forces are working with us, what forces work against us? What is it that needs to be sustained, what might need to be disrupted or *un*sustained? Here we see how the act of collaboratively envisioning sustainable futures can become a source of learning for sustainability. This book is as much about sketching possible and desirable futures as it is about envisioning as an educational act or possibility.

But the future is as much about the past as it is about the future. Both in envisioning and in backcasting we can benefit from what was before and how the past is represented in the present – and likely how it will continue to be represented in the future. Sometimes we can find things in the past that were lost in our 'leap' to modernity that might provide clues for sustainable future. Sometimes ancient practices and principles still exist in places that have been able, willingly or unwillingly, to escape this leap to modernity. Indigenous and intentional communities across the globe with more relational ontologies, communal values and ethics, and traditions that allow for more spiritual and meaningful ways of being in the world could very well offer guidance in envisioning a sustainable future (Chaves, 2016).

At the same time, envisioning a sustainable future might also benefit from imagination and (science) fiction, as they can lead us to consider the seemingly impossible, as well as create new energy and innovation. Critical here is that this energy and innovation is paired with some kind of planetary consciousness and underpinned with values and ethics that move Earth closer to the post-Anthropocene which, in the spirit of this book, we will call the Ecoscene. The Ecoscene is the geological epoch during which Earth enters a long relatively stable period where life on Earth is in a state of a dynamic equilibrium and homo-sapiens lives by a so-called flat ontology, recognizing that all species are exceptional.

Clearly we haven't arrived there yet, but let us assume that we have still plenty of time to get there or somewhere else that may turn out to be more sustainable.

So, the future then might be considered an emergent property that we never meet but when imagined can give us some direction in where we are going. As a 'product' of envisioning, it is marinated in uncertainty and complexity, and, indeed, in ambiguity, even controversy, as there will be disagreement about both knowledge and value claims with respect to what makes for a desirable future. Who is 'we' in the 'Future We Want' report on ESD (World Commission on Environment and Development 1987)? Who is included and who, or what, is not? Post-human perspectives and new-materialist (Alaimo, 2012) perspectives are not represented in such a report (not to mention the human perspectives not represented in the titular 'we'). Envisioning futures in the context of sustainability needs to be mindful of multiple perspectives.

A focus on the future and imagining what might be is needed in order to break through the tendency to see the continuation of present manifestations of global systemic dysfunction (e.g. climate change, mass extinction, excessive inequality, sexism, bigotry, animal abuse, and the on-going toxification of water, air, soil and bodies) as inevitable. Hope and possibility tend to bring about more change than fear and fatalism which tends to keep things the way they are. This is where the collection of chapters in this volume represent a much needed addition to the work that has been done within sustainability education on curriculum, competence, whole school engagement, institutional change, teacher education, and so on.

Contributors leverage speculative inquiry to imagine how nascent scientific, technological, social, and ecological developments might perturb, disrupt, and/or transform the field of environmental education. This includes mobilizing earlier lines of related inquiry within the field, such as the earlier mentioned backcasting (Holmberg and Robert 2000), as well as charting points of contact between emerging modes of speculative thought and the field's own longstanding concern with ecological futurity. In envisioning futures for our field, we are inspired by thinkers within fields such as design, architecture, and computer science. These disciplines have recently initiated discussions concerning how critical speculation might help practitioners challenge ingrained disciplinary assumptions. For example, speculative design (Dunne and Raby 2013), architecture fiction (Gadanho 2009; Lally 2014), and science fiction prototyping (Johnson 2011) harness science fiction's capacity to explore possible futures through extrapolating elements of our contemporary moment into imaginary worlds.

Decade of education for sustainable development book series

As we've said previously in this book series, the work of creating the future is being done now – and much of it is unsustainable in terms of natural and cultural resources. In fact, the notion of nature and culture as 'resources' can be challenged from a sustainability perspective. Can we imagine sustainable futures, and can we enable transformative leadership to help us realize them? Can we envision futures for the field of environmental and sustainability education capable of helping us achieve the transition to sustainability?

At a time of increasing local and global challenges and complexity, we seek to explore the intersection of education, sustainability, and emerging modes of speculative inquiry concerning alternative futures to those of our current unsustainable trajectory. This book likewise shares the creative and innovative contributions that academic centers, networks, and programs are making to advance strong sustainability in education, especially in higher education. This book is the fifth in a series on the United Nations Decade of Education for Sustainable Development (2005-2014) published by Wageningen Academic Publishers. Previous volumes in the series have addressed social learning (Wals 2007), young people's participation in sustainable development (Corcoran and Osano 2009), learning for sustainability in times of accelerating change (Wals and Corcoran 2012), and intergenerational learning and transformative leadership for sustainable futures (Corcoran and Hollingshead 2014). Each of these efforts have explored educational theories and practices necessary to construct a sustainable future. This volume builds on the topics of previous books by placing the concept of the *future* itself under critical investigation, asking questions such as 'whose future?' and 'through what intellectual and embodied processes can we create useful knowledge about likely, possible, and desirable futures?' Specifically, *Envisioning Futures for Environmental and Sustainability Education* explores how imagining, writing, designing, and building alternative futures might propel environmental education in new directions.

Our understanding of 'strong sustainability' and education for sustainable development in education emerges from declarations and initiatives of the United Nations, such as the UN Decade of Education for Sustainable Development and Agenda 21; civil society initiatives such as the Earth Charter; and the particular cultural, environmental, philosophical, and historical conditions of our communities and our universities. Embedded within this concept of strong sustainability is an intergenerational ethic expressed in care for the long term flourishing of Earth's human and ecological communities.

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Previous volumes within the series have responded to the complexity of environmental and sustainability education in our contemporary moment with concepts such as social learning, intergenerational learning, and transformative leadership for sustainable futures. *Envisioning Futures for Environmental and Sustainability Education* builds on this earlier work – as well as the work of others. It seeks to foster modes of intellectual engagement with ecological futures in the Anthropocene; to develop resilient, adaptable pedagogies as a hedge against future ecological uncertainties; and to spark discussion concerning how futures thinking can generate theoretical and applied innovations within the field.

Principles, perspectives, and praxis

The contributions to *Envisioning Futures for Environmental and Sustainability* are divided into three parts: Principles, Perspectives, and Praxis.

Part One: Principles provides a rationale for the book, an historical review, and forward-looking conceptual discussion of the book's key themes. Part One asks for inter-, trans-, post- and anti-disciplinary engagement with the accelerating pace of climatic change and ecological destabilization. This part of the book chart theories of environmental education at networked global, local, and molecular scales, and seek to develop proactive forms of anticipatory engagement with socio-ecological change, and to facilitate collective dialogue concerning alternative human-Earth futures.

Part Two: Perspectives includes contributions from applied research, policy analysis, and reviews. Authors critique both the strengths and weaknesses of existing knowledge within their respective fields vis-à-vis sustainable development and education for sustainable development, and offer new and innovative suggestions across geographic and thematic issues. Authors also examine how institutions and organizations can chart sustainable futures in uncertain times, as well as how they can they assist in the collective project of reimagining futures for environmental and sustainability education.

Part Three: Praxis contains specific examples of projects, institutions, and processes of education. These examples anchor the theory and perspectives articulated in the first two parts of the book. Specifically, Part Three presents examples of educational practice that leverage futures thinking in environmental and sustainability education practice. These examples show multiple stakeholders engaged in envisioning, charting, and actualizing alternative human-Earth futures, as well as arriving at consensus and articulating shared principles to animate action on behalf of sustainable futures. Examples come from across the spectrum of education, both inside and outside of formal institutions and from

across disciplinary boundaries. The examples range from global to local initiatives and encompass the three dimensions of sustainable development: environment; economy; and society, including culture.

The editors and the authors of this book have faith in both humanity and the power of education and learning. Clearly, just like business-as-usual is no longer an option and a complete rethinking of the way the dominant economy works is necessary, education-as-usual is not an option anymore either. Envisioning sustainable futures as an educational process that actively engages people, young and old, both generationally and intergenerationally, offers a way into the future and helps us move beyond fear and despair in humanity's attempt to become more caring, responsive, and responsible with the whole Earth in mind.

Education for the future

What might the future bring for environmental and sustainability education? Historically, we can distinguish different movements and emphases within education, communication, and participation in relation to people and planet (Table 1). Roughly this movement is from nature conservation education, to environmental education, to education for sustainable development (ESD) to environmental and sustainability education (ESE). Sometimes there was divergence (e.g. when nature- and ecology-oriented education and social justice and democracy-oriented education were separate, sometimes convergence (e.g. when environment and sustainability, along with health, peace, democracy are all seen as intricately linked). It must be said that these different 'educations' do not literally succeed one another – often they run parallel – and that there will be differences between geographical contexts. Nonetheless, the pendulum swings, but from reading the contributions in this book, we can presently see a trend towards convergence where both sense of place and the strengthening of relationships between people and the non-human and more-than-human world, as well as the questioning of deep rooted structures and hegemonic values, engaging multiple actors with sometime conflicting views and the crossing of boundaries between sectors and disciplines, are considered critical.

The recent Global Education Monitor Report (GEM 2016) shows quite clearly how education connects with all the Sustainable Development Goals as distinguished in the UN's Agenda 2030 (United Nations, 2015) It also shows that education can be highly problematic when is merely amplifies those capacities in people and those systems and structures in society that accelerate unsustainability. Of course this observation is not new. In fact David Orr, who wrote the Afterword to this book, pointed out over 20 years ago that when we fail to ask ourselves the question what does education strengthen in society and what does it weaken, then it could make

Table 1. A historical perspective of education in relation to people and planet (adapted from Wals 2012).

	Nature Conservation Education (NCE)	Environmental Education (EE)	Sustainability Education (SE)	Environmental and Sustainability Education (ESE)
Starting period	Late 19th century, early 20th century	Late 1960-ties, early 1970-ties	Early 1990-ties, end of the DESD (2014)	Present
Main focus	Connecting with nature, understanding web-of-life, protecting species, raising awareness, knowledge and understanding	Raising environmental awareness about pollution of water, soil and air. (note: there are forms of critical EE that resemble the focus and impact of SE)	Increasing citizen engagement, participation in sustainable development issues and increasing their understanding of the connections between environment, economy, culture and ecology and how today's actions affect future generations	As under SE but also: connecting with place and the non-human world (deepening of relations) as well as attention for both agency (learning to make change) and the critique and transgression of unsustainable societal structures. Global citizenship and local identity.
Intended impact	Ecological literacy; societal support-base for nature conservation through national parks	Changing individual environmental behaviors, developing agency and societal support for environmental legislation	A more holistic or integrated approach of dealing with issues around water, food, energy, poverty, biodiversity in governance, education, business.	A transition towards a more relational way of being in the world and a society based on values and structures that make sustainable living the default.
Examples	Visitor centres in National Parks, Public awareness campaigns, nature programmes in schools, school gardening	Environmental education centres in cities, Public awareness campaigns, school curricula, teacher training	Multi-stakeholder platforms focusing on sustainable development issues, Whole institution approaches to sustainability, Corporate Social Responsibility	Brokering learning and engagement within transitions: Intentional communities such as ecovillages, transition towns, whole school approaches, local food movements, shared economies, cradle-to-cradle design.

people 'more effective vandals of the Earth' (Orr, 1994). What is new, however, is that a major report from a United Nations organization, UNESCO, is recognizing this and departs from the standard narrative that all education is good because it will lead economic development and growth, and lift people out of poverty. The shift from Education for All (EFA) and the Millennium Development Goals to education as a mechanism to contribute to the Sustainable Development Goals (SDGs) – which are to be leading in international and national policy-making until 2030 – may offer possibilities for the kind of environmental and sustainability education many of the authors in this book are talking about. Although, in the spirit of reflexivity and critical thinking, the SDGs themselves will also need to be continuously scrutinized and debated as they too are highly political in subtle (e.g. SDG1 focuses on 'eradicating poverty' but not on eradicating extreme wealth) and not so subtle (e.g. SDG8 focuses on realizing 'decent work and economic growth' which sustains the idea that continuous growth is the centre piece of sustainability) ways.

We are envisioning a future of environmental and sustainability education that operates very much in the right hand column of Table 1. Of course, there will be unpredictable events that could yield a rather different future, but for now we see a much needed convergence between environmental and sustainability education where the two combined eventually will connect people and planet and empower people to make change and to live meaningful, dignified and responsible lives. A focus on 'what are the characteristics of such education and learning?' will shift the attention away from questioning how people should behave or what they should be learning. Instead other questions become important, questions like: 'Do the encounters educators create and the learning spaces they design or utilize allow for students and the structures of which they are part to become more sustainable in the first place?' Does the learning environment 'invite' people to reflect on values, controversies and dilemmas, to become critical of 'false news' and 'viral myths' and propaganda in the 'post-truth' era, but also: to take action when deemed necessary? These are the kinds of questions that will need to be asked if we as scholars, educators, and citizens want to support learning-based change towards a world that is more sustainable than the one currently in prospect.

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