CHALLENGES FOR ENVIRONMENTAL AND SUSTAINABILITY EDUCATION RESEARCH IN TIMES OF CLIMATE CRISIS

15TH INVITATIONAL SEMINAR ON ENVIRONMENTAL & SUSTAINABILITY EDUCATION RESEARCH

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Katrien Van Poeck, host of the 15th Invitational Seminar

INTRODUCTION

Katrien Van Poeck & Nadine Deutzkens

This book presents a collection of essays that informed the discussions at the 15th Invitational Seminar on Environmental & Sustainability Education Research centred around the topic "Challenges for environmental and sustainability education research in times of climate crisis" which took place in June 2022 in Ghent, Belgium. The aim of the seminar was to reflect upon the past and present of the research field in times of climate crisis and to discuss its developments with view to the future.

Since its first edition in 1993, the Invitational Seminar on Environmental Education Research has provided a dialogical platform for researchers from different parts of the world to discuss vital issues of research development in the field. As such, the seminar is unique in that it unites ESE researchers to meet and discuss developments of the *field* of ESE research in general, rather than developing *individual* research ideas and proposals as is usually done at scientific conferences. Thereby, the specific seminar mode enables open, collegial, intellectual exchange with conversations aiming for depth, richness and engagement. Issues are generally discussed slowly, both during formally and informally timetabled hours – a sharp contrast with typically 'fast' and 'short' interactions at other academic fora. As such, many have experienced the seminar series as a rare and valuable opportunity for a relatively small and diverse group of active researchers to meet in such a setting.

The 15th edition of the seminar built on this tradition, but also adapted to the changing context in which contemporary ESE research takes shape. It is the first time that an Invitational Seminar results in a collection of essays and, in fact, this book reflects and materialises the major change in the organisation of the seminar. Traditionally, the Invitational Seminar was only open to researchers who received a personal invitation, an approach driven by a concern for safeguarding the specific ethos of the seminar. However, the field of ESE research has grown considerably since the start of the seminar series, which makes it impossible to know all potential invitees. During the 14th Invitational Seminar in Stellenbosch, South Africa, this 'invitational' – some would say 'exclusionary' – character arose as a major topic in the debate about the future of the seminar series. Some were wondering if the seminar series still had any *raison d'être* today, in an ESE research field that has grown and matured and offers plenty of other settings for academic discussions such as specialised networks at the major educational research conferences and diverse small-scale scientific networks. On the other hand, however, the specificity of the Invitational Seminar with its open, deep, engaged, collegial intellectual discussions was still considered very scarce and extremely valuable. When the Centre for Sustainable Development of Ghent University accepted the proposal to host a 15th edition in collaboration with partners of the SEDwise network ('Sustainability Education – Teaching and learning in the face of wicked socio-ecological problems'), we did so under the condition that we would strive to open-up the opportunity to participate to all ESE researchers while maintaining the specificity of the traditional seminar mode.

Thus, for the seminar in Ghent all ESE researchers were invited to submit a proposal in the form of an essay which raises and discusses critical problems, trends, challenges and issues for the development of ESE research in times

of climate crisis. To guarantee the seminar's collegial and engaged atmosphere, while at the same time bringing together a variety of different perspectives, we developed a peer-review process to select an international and intergenerational group of 37 researchers who contributed relevant, high-quality and 'cutting edge' essays to participate in the seminar. Their essays are compiled in this book.

During the seminar, these essays served as a starting point and source of inspiration for our discussions. The participants received each other's essays in advance and were invited to read them and formulate questions and reflections on each other's writings in preparation of the seminar. The aim was to combine attentiveness to the diversity of ideas and questions raised in the individual essays with a broader focus on the continuous development of the research field as a whole. In addition, we wanted to stimulate participants to think future directed while also taking into account the past and the present of ESE research. Central questions were: What are main challenges, questions, etc. for the field in times of climate crisis? Are there any problematic tendencies? What sort of knowledge is lacking and how can we create it? Which theories and methodologies are over- or under-represented? Do we notice any promising new ways forward – theoretical, empirical or methodological approaches that may lead to novel pathways for future ESE research and contribute to moving the field beyond its current state of the art? In addition, sustainability problems and thus ESE research and practice vary within different locales and bring about different local challenges, developments and approaches. This raises important questions regarding the transferability of theoretical frameworks, methodologies as well as empirical results *between* and *within* North and South which requires us to critically discuss developments in ESE research from different standpoints.

The essays presented address the wider challenges for ESE research and practice in times of climate crisis in relation to four more specific sub-themes. The first sub-theme focuses on the challenges that sustainability education faces due to the controversies which often surround sustainability issues such as the climate crisis. Ethical standpoints may prove irreconcilable, facts and knowledge are sometimes contested and fierce political antagonism regularly arises. Therefore, addressing the controversial aspects of sustainability issues is a pedagogical challenge. In the second part, emotionally challenging and existential issues in teaching and learning practices are being addressed. Sustainability problems can cause strong emotional reactions such as feelings of worry, anxiety and ecological grief as well as existential experiences. The complex challenges this poses for teaching and learning are the focus of this sub-theme. Part three centres on the relation between education and the pursuit of societal transformation. As education is continually appealed to for contributing to solving societal problems such as the climate crisis, the role of education in the pursuit of societal transformation remains a highly debated issue in educational research and is addressed in the third section of this book. The fourth sub-topic deals with the boundaries between ESE research and practice. ESE research is usually grounded in an ambition and engagement to contribute to improving ESE practices. This requires fruitful collaborations across the boundaries between research, education and services to society. The final part of the book thus attends to the challenges and opportunities of research–practice collaboration.

In line with the aim of the seminar to approach the research field from a 'birds-eye' perspective, these four topics have been discussed – both within and across subtheme groups – in view of formulating reflections on what has been done so far as well as recommendations for ESE researchers and future research in the field. The results of

these discussions on the four different topics are described in the introductory sections for each of the four parts of this book.

By distributing this book – and other 'output' of the seminar such as a podcast series, graphic recordings of the discussions in the subtheme groups, and some videos of participants reflecting on their experiences in the seminar – we want to open up the dialogue about challenges for ESE research in times of climate crisis beyond the seminar participants. Both our own experiences and the feedback received from participants stressed again the value of small-scale events and in-depth, informal collegial conversations and thereby confirmed that this seminar series still has an important role to play in the contemporary ESE research landscape. Many organisers and other participants also expressed that they felt privileged to be able to take part in this dialogue. After all, in the review process, we had to disappoint more than half of the applicants in order to secure the small-scale setting. Therefore, we wanted to 'give something' back to those that could not be there. Hence, by distributing the output we hope to serve a double purpose: reaching out to more colleagues to engage in discussions about the topics addressed, and drawing attention to the Invitational Seminar as a unique academic setting which deserves also a 16th, 17th, etc. edition. If you want to be informed about a next edition or might even be interested in participating in the organization thereof, please indicate this here: https://forms.office.com/r/262DUXFY7A.

SUB-THEME 1

SUSTAINABILITY ISSUES AS CONTROVERSIAL EDUCATIONAL CONTENT

Jonas Andreasen Lysgaard & Johan Öhman

The essays in this part focus on how sustainability issues never rest easy within educational processes. There is always more at play than what is present, and ongoing efforts to turn the great challenges of our time into manageable chunks of knowledge that can be disseminated through education seems to be at odds with the core radicality that these issues contain. Through the days of the Invitational Seminar in Ghent in June 2022, these essays formed the basis of an extended discussion of how sustainability issue raise themselves as controversial within our field, how we can understand them, but also what that might imply for the continued development of the ESE research field. A field that is now very much stretching its legs in a continued mainstreaming of the focus on sustainability challenges, but also seemingly newfound ambition in the research, practice and policy processes trying to emphasize, and perhaps even address ESE challenges.

MAIN CHALLENGES FOR THE FIELD

In our group discussions and work, based on the diverse range of participant essays, a number of specific research challenges emerged during the Invitational Seminar:

1. The radical controversial core of ESE practice and research
2. What is not present and which voices are not heard
3. The role of norms and values

These perspectives or themes became the centre of our group's discussions during the seminar. While a great array of perspectives and nuances, venues, cul-de-sacs and vistas were touched upon during our diverse processes, the overall arguments and ambitions underpinning these perspectives shaped both our individual perspectives and collective approaches and hopes for potential future work.

PROBLEMATIC TENDENCIES

With regard to the radical core of ESE as a practice and research field, discussions highlighted how the current mainstreaming of sustainability and environmental issues into the broader practices of education and education research also highlights the constant challenge of dumbing down the insights that the ESE field produces in order to incorporate them more seamlessly into existing, and at times, backward oriented educational systems around the world. This should be problematized, critiqued, and potentially fought against with explicit insistence on the radical critical core of the concepts and traditions at play within ESE research. Critiques of e.g. the UN SDG framework and its risk of upholding a liberal Eurocentric colonial approach to development, is an example of where the ESE research field could play a strong role, but not always manages to.

Discussions of that which is not present, and the voices heard less often in ESE research underpinned the wide array of emerging and critical areas of research that could play a wider and stronger role within ESE research. Post-colonial and de-colonial perspectives, gender studies, voices from the global south, indigenous knowledge, more

than human perspectives, post-humanism, new materialist critiques, critical race studies are examples of vibrant areas of insights, knowledge and research. These perspectives could play a far stronger role within ESE research in order to ensure the ongoing worthwhile contribution from our field to both practice and the greater field of educational research in general, but also challenge pre-existing core conceptualizations within our field and hopefully help us all move forward. A central discussion was how these radical perspectives relate to the democratic endeavour of formal education and the tension between normative and pluralistic approaches to education.

Discussions of that which is not here led to considerations of how to bring out those voices, and that approaches to "represent", "include" or "link" other cosmologies into existing westernized schools of thought opens up for problematic potential of toothless appropriation of radically different cosmologies into an already set and often exploitative existing power structure. One thing is to include different perspectives from emerging, radical or different approaches, another thing is to actually understand and change how existing research approaches can often be a part of the reproduction of practices and structures that we deem unsustainable and try to fight against. These discussions where especially enriched by the voices in the group from the global south and critiques of the relatively staid and appropriative nature of most research, not only within ESE.

These perspectives and critiques also fed into the theme of the role of norms and values within ESE research. Well known positions critiquing tendencies towards behaviour modification at times also underestimate the specific role of norms and values and how these are both present in the seemingly benign wish to pursue sustainable development, but also act as a deep reservoir of didactical and educational insights into both implicit and explicit normativity of the field and the related values. These can be framed as universal and uncontested, but do represent certain perspectives, ideas and interests that need to be brought into critical light, but also challenged from the many radical and yet unheard voices that are entwined in ESE research and the overall development of our local and global communities.

OVERLOOKED AND/OR NEW TOPICS

Linking with our proposed themes, it seems that there is little else to our field besides overlooked and rarely visited radical potentials. While that might seem unfair, the current mainstreaming tendencies and thus also greater breadth and impact of the ESE field highlights the need for a greater focus on that which is not here and how shifts in the proposed narratives and cosmologies at play could change how we see the world, but also how we want to engage with it and potentially change it. Topics are a plenty, but the easy thing to do could also be to reach out and read into fields that are pushing an expanding continuum of different ways of being in the world and interacting with it. Interacting with a range of emerging research perspectives could help the ESE field to expand, turn inside out, revitalize, re-radicalize or perhaps even make research more joyous and expansive for us as researchers: Post-colonial and de-colonial perspectives, gender studies, voices from the global south, indigenous knowledge, more than human perspectives, post-humanism, new materialism, critical race studies etc. could be starting points, but the list should grow indefinitely as ways of disrupting and reimagining our own set trajectories and narratives of our field and its role in the continued knowledge production around environmental and sustainability education.

PROMISING THEORETICAL, EMPIRICAL AND/OR METHODOLOGICAL APPROACHES

The participants in the group discussions drew on insights from a wide range of theoretical and methodological backgrounds. The discussion on different conceptualizations of radicality linked to ESE were e.g. informed by both recent and classical takes on critical theory and the potential of disclosing underlying agendas, ideologies and power structures as a key focus of doing ESE research. Post-colonial, de-colonial perspectives and theories dealing with indigenous knowledge added much to the efforts to rethink the less present or not represented voices in ESE research. Linking with new materialist, speculative realism and eco-feminism perspectives expanded the discussions towards more than a long list of ambitions to represent and thorough discussion of what role different cosmologies and narratives play when dealing with radically different approaches to understanding what knowledge means in different settings and from different perspectives and how that could expand, revitalize, but also shift and radicalize ESE research. At the same time, it is also important to problematize the political and ethical assumptions of these radical perspectives and the consequences of implementing them into ESE research and education.

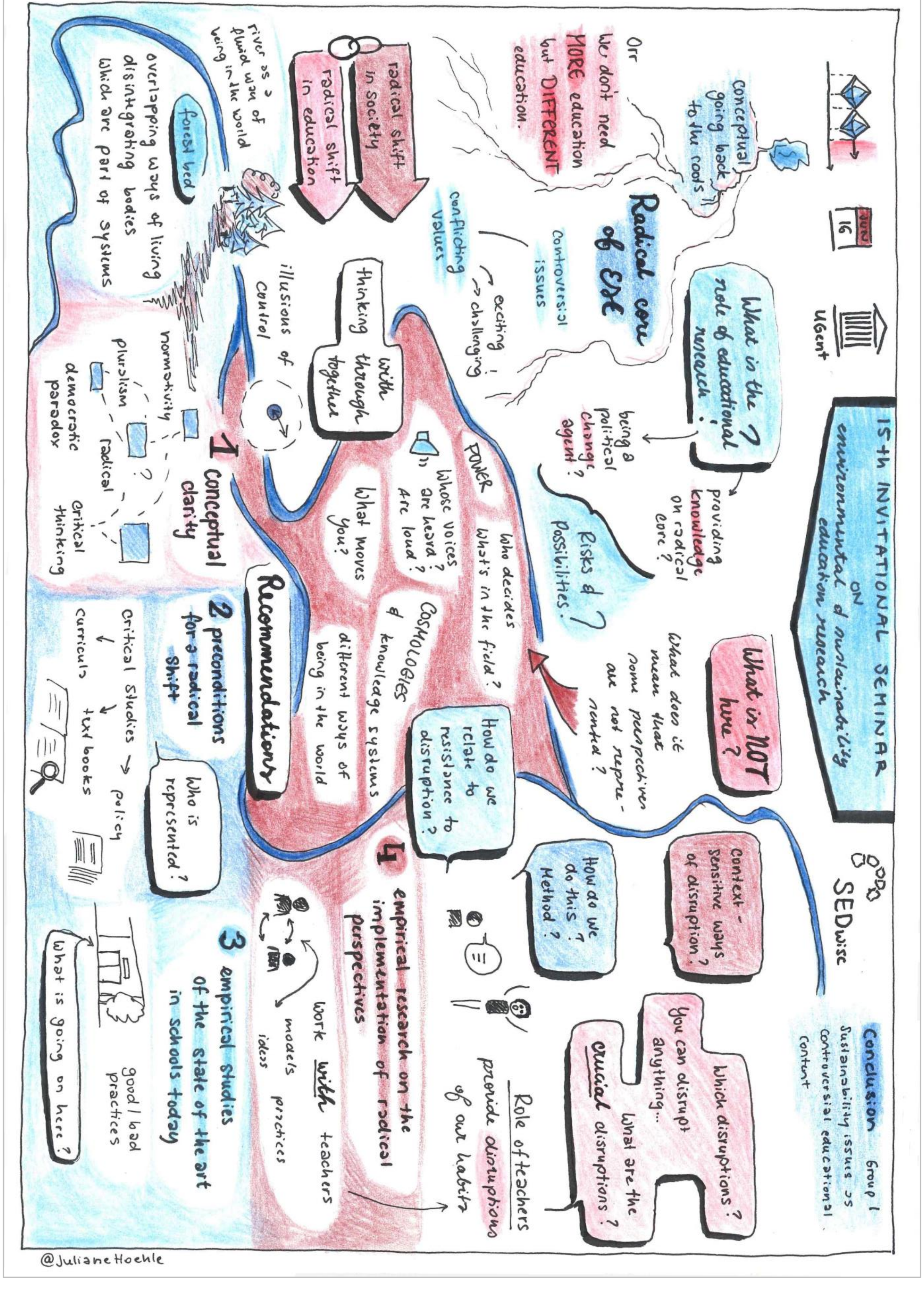
REFLECTIONS ON THE PAST OF ESE RESEARCH

The "field" and how to understand, navigate, challenge, and build on it was a reoccurring theme during the seminar and in our group. Knowing the traditions, key developments and discussions within the ESE field was both heralded as key in continuing the critical expansion of the knowledge and insights that the field encompasses, and as something that should be used in order to disrupt and re-orient what the field is. At the same time, it was also very much a part of the discussion how the field is perhaps more than what it used to be. Several of the participants mentioned the ongoing mainstreaming tendencies within the field. This gives access to new areas and funding possibilities in policy, funding and practice terms, but it does of course also entail a radical disruption of how we can consider and understand the field as anything resembling a relatable concept and field of research practice. According to the participants, the field is neither young nor small anymore. That does not mean that past insights or the EE/ESD history should be discarded, but it does entail discussion of how we should frame concepts such as "core insights", fuzzy borders or truly inter- and trans-disciplinary developments of the late years. The seminar acted as a constructive framework for discussions related to how we feel part of the ESE field, but also very much part of other fields and how the overlapping of fields have led to an interesting tendency toward bric-a-brac, assemblage, hybrid or liquid conceptualizations of the "field".

SUGGESTIONS FOR A RESEARCH AGENDA & RECOMMENDATIONS FOR ESE RESEARCHERS

It is, again, time to insist on the radical core of ESE research agendas. Not as a political statement, but as an ongoing deliberation over the perspectives that we as individual researchers and collectives find pressing and unavoidable when working with ESE challenges. We should not slide into a comfortable position as supporters of a world gone awry but push new and old agendas linked to the transformative and often political agendas embedded within ESE research. Constructive discomfort can be a wonderful position to be in as an ESE researcher.

We need to continuously ask others and ourselves what is missing in the field. What voices are not heard, human and otherwise, and how could we reform, alter or transform our work in order to open up for these voices to be a central part of the field. A range of post-colonial, gender and new materialist, post-human perspectives serve as strong inspiration for pushing the boundaries of the field in order to truly engage with pressing ESE challenges that cannot be pre-empted within neither disciplinary boundaries, nor existing research methodologies or practices.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Sustainability issues as controversial educational content
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providing knowledge on radical core?
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Risks & Possibilities?
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radical shift in education
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What is going on here?
@JulianeHoehle

The Political Economy of Environmental and Sustainability Education[1] A Terminal Crisis?

Zulfi Ali

In his celebrated 1935 Vienna lectures (Husserl, 1935), Edmund Husserl spoke of the crisis of European[2] humanity and wondered whether Europe would recover from the crisis. What Husserl could not have predicted is that nearly a century later, one arc of the trajectory of the crisis, arising directly from the philosophical ideas and approaches he warned about, would result in the biggest existential crisis in the form of climate change and biodiversity loss, impacting not just Europe, but the entire global community.

Following the widely anticipated failure of COP26 (Al, 2021; Ramsay, 2021; Sheather, 2021) to deliver radical outcomes, two strands of debate are clearly discernible. One, the need for completely new and deeply radical measures moving forward. There is a realisation that business as usual can no longer be an option. Two, the chances of humanity surviving this existential crisis and what it would take to make this happen (Read and Samuel, 2019). For non-scientific academics, this raises a key question pertaining to their role: can ESE contribute significantly to averting the current crisis through ESE?

Having worked in international development in the Global South for over two decades, my short answer to this urgent question is no, and I fear that internally, for ESE as a field, the crisis may be terminal. My argument for this position is two-fold. One: whether we trace the political economy of the ideas driving the destructive trajectory we are on; whether we look at the historic carbon emissions in relation to who is responsible for our predicament and who pays the highest price; or whether we consider the agenda setting of actions today; the power relations between the Global North and South remain colonial/imperial in nature . There is little (and far too slow) acknowledgement within ESE of even the need to alter these power imbalances, forget addressing them. Unless this is done, ESE can have little radical impact. Two: even within the field, ESE today is too de-politicised, too de-radicalised and too disconnected from the social, political, economic, and other drivers that shape the world, for it to be able to contribute significantly to the ongoing and urgent debates and actions involving environmental and social injustices globally. This places ESE as a field in danger of becoming irrelevant to the struggles that lie ahead.

I suggest that there are three critical failures of ESE, all related to colonial and neoliberal worldviews, that structurally prevent it from contributing towards analysing, understanding, articulating and mobilising for action in radical ways:

One, a failure to critique and challenge the conventional, Western, donor-driven narratives of international development which inform our understanding of sustainable development, and consequently our approaches to ESE. While such critiques have been presented in other fields (e.g. Rodney, 1972) (Ahmad and Barsamian, 2000; Césaire, 1950; Chang, 2002; Chang and Aldred, 2014; de Rivero, 2001; Fanon, 1961; Frantz, 1995; Hickel, 2017; Loomba, 2015; Memmi, 1957; Raworth, 2017; Roy, 2014), and despite calls for considering connected histories (Subrahmanyam,

[1] In this paper I will loosely refer to all variations of such education as ESE.

[2] 'European' here is a spiritual identity based on ideas and philosophical approaches, not geography. See Kundera, 1986.

2004) and connected sociologies (Bhambra, 2014) ESE has been slow at incorporating radical perspectives. For example, the continued use of the Sustainable Development Goals as a major reference point in ESE bypasses a historical analysis of postcolonial and decolonial histories and asymmetries.

Two, a failure to think beyond and challenge the mainstream narratives of neoliberal capitalism when analysing the current political economy of the architecture of global decision making. This too has been done in other disciplines, (e.g. Bourdieu, 2003, 1998; Chomsky, 1999; Harvey, 2007; Picketty, 2014; Roy, 2014) but not in ESE. After all, is it possible to understand the structural trajectories of the causes of environmental and social injustice crises we face without challenging the ideologies that are largely responsible for these crises? This renders it near impossible to go beyond the exploration of cosmetic changes internal to neoliberalism. It also prevents us from contemplating more humane and sustainable ways of organising society, thereby severely restricting our imaginations and visions of the future.

Three, a failure to welcome and structurally work with lenses other than the Western, industrial, scientific, consumer driven, and competitive ones. Again, while there are many ideas arising from other disciplines (e.g. Black, 2010; Davis, 2009; de Sousa Santos, 2015; Norberg-Hodge, 2012, 2003, 2000; Shiva, 1993), ESE has struggled to give due respect and consideration to other knowledge systems or ways of being. Having largely ignored a long history of 'epistemicide' (de Sousa Santos, 2015) and 'the disappeared knowledge systems' (Shiva, 1993), we are now in danger of heading towards a monoculture. ESE is largely parochial and narrow in perspective, often unable to arrive at multiple, richer and more complex understandings.

Despite this bleak critique of ESE, there may be a way of reversing the deradicalized, depoliticised and tamed nature of ESE, even within the neoliberal academy. I believe 'critical pedagogy' (Antonia Darder et al., 2003; Antonio Darder et al., 2003; Freire, 1970; Giroux, 1983; McLaren and Kincheloe, 2007) can offer a way forward for the current failures of ESD. This could happen in at least two ways:

One, critical pedagogy starts by taking sides and this makes it a radical set of ideas that is the need of the times. It is on the side of the oppressed, the disenfranchised, the vulnerable, the colonised and those who face intersections of discrimination in their daily lives. And it defines educational aims in terms of empowering the oppressed and resisting structural inequalities. This positions it clearly as a set of ideas developed not to favour the rich and powerful, but the '99%'. Borrowing from this approach of encouraging critical thinking, community and solidarity (e.g. see Hooks, 2010, 2003) would make ESE relevant and help it counter business-as-usual, status quo thinking.

Two, through the idea of praxis, critical pedagogy presupposes links between theory and practice, as, "all theory is considered with respect to the practical intent of transforming asymmetrical relations of power" (Antonio Darder et al., 2003: 15). So, education and activism are intertwined, not separated. In this way, critical pedagogy also helps us understand that a key purpose of education ought to be to ignite our imaginations in radical ways so that we can imagine different worlds and generate renewed possibilities (Giroux and Franca, 2019). Seen in this light, critical pedagogy is the pedagogy of hope (Hooks, 2003). Such a pedagogy would enlarge opportunities for ESE to engage in hopeful dialogues when considering futures education. As Pierre Bourdieu said: "I have come to believe that those who have the good fortune to be able to devote their lives to the study of the social world cannot stand aside, neutral and indifferent, from the struggles in which the future of that world is at stake." (Bourdieu, 2003).

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Disentangling Normative vs. Pluralistic Discourses: What Can We Learn from Self-Determination Theory to Make ESE More Inclusive?

Murod Ismailov

My proposal is related to the Seminar's following agenda points:

- *What are different local manifestations of and/or ways to handle this challenge? (How) do ESE researchers approach it differently in diverse local contexts?*
- *Is the long-lasting debate about 'normative' versus 'pluralistic' ESE gaining or losing relevance in the face of such issues? Or should it be approached from novel perspectives and, if so, which ones?*

A multidisciplinary approach involves drawing appropriately from multiple academic disciplines to redefine problems outside of normal boundaries and if possible, reach a consensus based on a new understanding of complex situations. I believe that the academic community is now in broad agreement that climate change and sustainability education are facing very complex challenges. However, one can also notice that 'multi' has its limitations and multidisciplinary initiatives do not always bring 'all the disciplines needed' to make the discourse inclusive, and in the best-case scenario, to have a positive impact on the design of climate change and sustainability curricula.

For example, in January 2022 I initiated a round-table Socratic seminar on the future of climate change education with a keynote by Professor Walter Leal (HAW Hamburg) and sixteen other prominent scholars of sustainability education. The panel also included the representatives of UNESCO, UNICEF, and even a climate change advisor to the government of a small Pacific Island – the most vulnerable place to be during the climate crisis. Although I had sent invitations to over forty scholars from a variety of disciplines (sociology, psychology, political sciences, linguistics, etc.), I was not surprised that only those scholars and practitioners who considered themselves 'technically' involved with climate change in their daily practice, accepted the invitation. This I thought was good news for the seminar, I nonetheless concluded that it was a drawback to making the discourse on climate change education more versatile and inclusive.

I think that the continuing climate crisis is having a profound impact on what is happening in our classrooms. To disentangle the intangible threads of multidisciplinary I decided to study social psychology and see how some of its concepts could help us better understand the future of climate change education and design more inclusive curricula. One concept which I find particularly interesting, and surprisingly under-researched in the context of ESE is self-determination theory.

Self-determination theory (SDT) is a useful psychological framework to assess how certain teaching designs could cater to learner inclusion to raise the awareness of diverse groups of students about climate change and the actions needed to mitigate its impacts. By underscoring *'the basic human needs and the diversity of ways they are expressed and satisfied'* (Ryan and Deci, 2017), the theory explicitly supports inclusive teaching practices. Specifically, the theory focuses on social-contextual factors that foster or hinder students' thriving through the satisfaction of their basic psychological needs for *autonomy, competence, and relatedness*. From SDT's perspective, all students are inherently prone to learning, mastery, and connection with others (when working to solve critical problems, such as

climate emergency), but these human tendencies are not spontaneous—they require nurturing conditions, such as need-supportive teaching behaviors, inclusive structures, and learning environments. When pedagogical designs effectively satisfy these needs, students are more likely to be motivated to engage in learning activities (Ismailov and Chiu, 2021). The major challenge is that our students are finding our teaching approaches regarding climate change fixed and often disengaging, and it is, therefore, important for us to understand how addressing our students' psychological needs in the first place could impact the ways they engage with this issue.

Thus, what makes me think so? Gen Z, as represented by 2.5 billion people who were born between 1997 and 2012 and who grew up in a technology-rich environment, is now the world's largest population cohort (Friedman, 2021a). A large proportion of this group is attending various levels of education. Their climate activism is good news for our planet but may not be so good for educators and the long-term education goals. Simply put, given the sluggish political activity toward CO2 reduction, as was seen at COP26, our students' growing climate activism and solidarity are expected to expand dramatically over time. With more students both energized and mobilized through social media, there is a reason to expect that educational practices will be disrupted at scales never seen before. Also, by observing these emerging discourses, one cannot but miss the point regarding the declining trust in the government-run education system in general. Personally speaking, it is not the prospect of youth protest that worries me most, but the lack of much-needed educators' voices and lack of climate-centered grassroots-based pedagogic innovations to display that the teachers are part of the solution.

The teachers of all disciplines and at all stages of education should take their portion of responsibility and use new approaches to nurturing productive, science-based climate activism that prioritizes robust social action along with publicly acceptable social rallies. To echo Thomas L. Friedman, to save the earth, along with 'a few more Greta Thunbergs and Elon Musks' (Friedman, 2021b), we also need even more Johan Rocktroms and Sir David Attenboroughs working with young people in the classrooms.

For now, teachers seem to be losing their ground. I have recently interviewed a dozen of young climate protesters during Fridays for Future rallies in Tokyo, Japan. To my surprise, every time I was there, I saw a few high school students. Given the strictness and thought uniformity of the Japanese K12 system, it seemed both surreal and courageous to observe these students quit their classes and join their older peers, mostly university students. In private, high schoolers echoed their fellow protesters outside Japan by asking 'Why should we go to school if we aren't sure that we can survive the heat?' Others voiced frustration with many of their teachers viewing 'climate crisis as none of their business.' One should expect such sentiments to grow stronger even outside more liberal regions, such as Western Europe.

In my daily practice, I seek to elaborate on these issues by bringing alternative perspectives from other regions of the world, such as Asia-Pacific where I currently work, or from Central Asia where I grew up and often visit.

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Environmental Education in Brazil: Analysis of Theses and Dissertations and Aspects of Interculturality and Decoloniality

(EArte – State-of-the-Art Project 1981-2016)

Danilo Seithi Kato, Luiz Marcelo de Carvalho, Luciano Fernandes Silva, Romualdo José dos Santos, Brenda Braga Pereira & Camila Kazumi Kitamura Mattioli

As we have reported in some papers, book chapters, congresses, and seminars (Fracalanza et al., 2009; Carvalho and Silva, 2011; Carvalho and Souza, 2018; Carvalho et al., 2019; Pereira et al.; 2022), an inter-institutional group of Brazilian researchers has carried out the project "State of the Art of Environmental Education Research in Brazil – analysis of master's and doctoral studies - 1981 – 2020 (EArte Project, which means – Environmental Education – state of the art –) since 2008.

In its heart, the EArte Project entails the construction and maintenance of a database of theses and dissertations on environmental education in Brazil. Moreover, the objective of this research project is to give a descriptive and mapping overview of Brazilian Environmental Education Research (EER), regarding institutional, regional, and educational contexts, such as universities, post-graduation programs, and the regions of Brazil where these research studies were carried out. Furthermore, the EER databases provide information for researchers interested in more comprehensive and interpretative studies considering their particular interests[3].

Since 2016 a group of researchers from different Latin-American countries has made an effort towards an internationalization process of the EArte Project: a network of researchers in environmental education in Latin America and the Caribbean has carried out a state-of-the-art environmental education research - "EArte Alyc". Researchers from Universities in Mexico, Cuba, Brazil, Colombia, Argentina, and Chile have taken part in this project. The main objective is to analyze and identify panoramas and tendencies in knowledge production (meta-analysis) in the field of Environmental Education in the Latin-American and Caribbean territory.

In an effort to open up discussions and dialogues in this seminar related to the subtheme "Sustainability Issues as Controversial Educational Content," a brief summary of one doctoral study and two master's studies, carried out by researchers linked to the EArte project, were selected. Also, some possible questions and theoretical and methodological perspectives have been raised from the results of these studies based on the background of this project. We are mainly interested in investigating the limits and frontiers of the field of EE research, as well as in knowing what aspects of the dialogues with Afro- Amerindian cosmopolitics can contribute to a decolonial EE research agenda.

These ideas have led us to follow a research question: what has been produced by researchers in Brazil on Environmental Education, and are there any decoloniality and interculturality aspects? From this central question we intent give shape to the environmental discourse, presenting it as dynamic and plural in the current academic

[3] A more detailed history of the project, its objectives, the selection criteria, and classification of documents in the EArte dissertation and thesis database, the descriptors used in this process, along with other project data, can be found on the project website: www.earte.net.

production in Brazil through the presentation of three state-of-the-art studies in environmental education produced in the context of the inter-institutional EArte project.

"SOCIO-ENVIRONMENTAL CONFLICTS AND EDUCATIONAL PRACTICES: AN ANALYSIS OF MASTER'S AND DOCTORAL STUDIES CARRIED OUT IN BRAZIL (1981-2016)."

In this study, 43 theses and dissertations were examined. Regarding the relationship between educational processes and environmental conflicts, we have proposed some perspectives considered in the reviewed research which are explicitly linked to the political dimension of the educational process. Thirteen research studies emphasized that the educational process could stimulate social agents involved in conflicts related to political actions to face the challenges imposed by this context; eight emphasized the relevance of exploring the relationship between socio-environmental conflicts and socio-environmental justice. Finally, eight mentioned the possibilities that open to practices which point to processes of transformation/social change; seven pointed to possibilities of exploring the relationship between participation and citizenship.

"ENVIRONMENTAL EDUCATION AND SCIENCE EDUCATION: AN ANALYSIS OF MASTER'S AND DOCTORAL STUDIES THAT DEAL WITH COMPLEXITIES."

For this study, 20 master's and doctoral studies have been selected. The purpose of this research was to investigate meanings that the term complexity assumes in Brazilian master's and doctoral studies in the field of environmental education articulating with the field of science education, especially when addressing environmental issues. The data show that the complex- thinking category was the most frequently used, identified in fifteen of the twenty master's and doctoral studies. The category of complex systems was in twelve out of twenty, and finally, the complexification category was in four out of twenty. These master's and doctoral studies show a greater identification with the ideas by Edgar Morin and Enrique Leff. It is considered relevant that these studies focus on discussions that articulate environmental issues and complexity in a very broad sense. However, even when considering these contributions, it is suggested that dialogue should be expanded in an exchange with other areas of knowledge that have traditionally produced papers and books focused on ideas of complexity in a strict sense.

"ENVIRONMENTAL DISASTERS AND ENVIRONMENTAL EDUCATION: ANALYSIS OF BRAZILIAN DOCTORAL AND MASTER'S STUDIES ON THE EARTE PROJECT DATABASE."

The data compiled here refer to the results of state-of-the-art research, in which we seek to analyze the relations between environmental education and environmental disasters in master's and doctoral studies in EE in Brazil. Five studies were analyzed and comprised the documental corpus of the research which oriented the content analysis. Thus, seeking to identify the most relevant topics emphasized by the researchers regarding environmental disasters, it was possible to propose three categories. It was seen that there is a certain, progressive tendency to consider the Brazilian and Latin-American reality to be related to intense social, economic, and environmental asymmetry, establishing an intrinsic relationship between environmental disasters, economic systems, and socioenvironmental injustice.

SOME NOTES ON META-RESEARCH IN ENVIRONMENTAL EDUCATION

Since we have proposed to consider the results of these research studies, herein briefly systematized, we think it would be helpful to involve controversial issues in our research and educational practices and consider sustainability and education/environmental education as a discursive field, as an ideological sign and part of an infinite network of meaning-making processes that is socially and dialogically constructed.

From meta-studies, such as that related to Santos (2019), it is possible to perceive that the meanings and senses concerning socio-environmental conflicts and educational processes reveal attention to the involvement of different stakeholders associated with the conflict. Thus, when considering the different voices involved, we are assuming epistemic plurality and the possibility of intercultural dialogues as a way of overcoming the conflict with a view to environmental justice. Thinking about EE research that focuses on local socio-environmental conflicts, the inclusion of the plurality of voices, epistemes, and the subjects' ontological commitments to overcoming the problem is, in our perspective, the assumption of a critical interculturality and decolonial research agenda (Walsh, 2010).

Within the scope of Latin America, the pertinence of reflecting on and discussing possibilities for sustainability/environmental education without falling into the traps of universalization and decontextualized discourses has been emphasized in order to appropriate loopholes and establish critical dialogues and policies which contribute to the construction of a democratic and sustainable society based on the principles of environmental justice. Additionally, the region has a climate that is suitable for opening frank dialogue on perspectives involving interculturality, blackness, feminism, among other movements. Many of them further theoretical reflection on practical experiences that lead us to decolonial views, mainly from Latin-American thought, in times of climate conflicts.

When we analyze theses and dissertations, we seek, in Environmental Education in Brazil and its relationship with critical interculturality, to question aesthetic elements (theoretical and methodological aspects) of the research and also find possibilities for carrying out investigations in line with decolonial aspects. In this case, it is important to emphasize that EE research and its relations with critical interculturality undoubtedly involve the possible dialogues of knowledge between modern Western Science and Afro-Amerindian cosmopolitics. Thus, Discourse Analysis, in the dialogical perspective by Bakhtin and his Circle, takes place in the context of a national cooperation project "Environmental Education in Brazil: analysis of academic production - theses and dissertations" (EArte). This was the path chosen to debate epistemological aspects of research in EE. We seek to understand how research appropriates the relationship between traditional knowledge and sustainability, and how this relationship can take place from a critical intercultural project based on elements of the Brazilian, Latin-American, and Caribbean reality.

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The Pluralistic Approach and the Democratic Impasse

Ole Andreas Kvamme

The field of environmental education was established in the 1960s and the 1970s as a response to the emerging ecological crisis, aimed at changing students´ attitudes and behavior (Hume & Barry, 2015). In the following decades new contributions emerged that more strongly acknowledged the ideals of liberal education in contrast to the previous positions that were assessed as instrumental and reductionist with regard to the openness of education (see e.g. Jickling, 1992; Bruun Jensen & Schnack 1997; Sandell, Öhman, & Östman, 2005; Schlottman, 2012). Accommodating a manifold of conflicting perspectives emerged as an aim in itself, supported by educational theory that emphasized the significance of social learning (Wals & van der Leij, 2007). This is a direct link to the problems in sub-theme 1 in the call to this year's invitational seminar: 'Sustainability issues as controversial educational content'.

In prominent accounts encouraging a pluralistic approach to environmental and sustainability education, democracy is the central reference and normative premise. In the absence of an objective method, democracy in itself becomes a norm (Sandell, Öhman & Östman, 2005, p. 169–170). From here follows that the overall purpose of environmental education is to let "students develop into well informed members of society who take an active role in social debates on the environment and sustainable development" (Sandell, Öhman & Östman, 2005, p. 173). A similar reference to democracy also distinguishes other pluralistic accounts (Bruun Jensen & Schanck, 1994; Schlottman, 2012).

In the various contributions, the concept of democracy is frequently embedded in notions of liberal democracy, often not precisely determined (Jickling, 1992; Bruun Jensen & Schnack 1997), sometimes linked to deliberation (Englund, Öhman, & Östman, 2008; Schlottman, 2012), to agonism (Sund & Öhman, 2014) or to both (Tryggvason & Öhman, 2019).

However, none of these accounts address a major challenge with regard to democracy and sustainability: "Given that virtually all nations of the world have formally subscribed to the goal of sustainable development – and that the goal is to be realized through democratic means – how well-suited are existing, and normatively dominant, democratic models and norms for actually achieving the goal?" (Lafferty, 2012, p. 302). The conclusion of the political theorist William Lafferty is not encouraging, identifying a democratic impasse linked to the existing forms of democracy and the requirements of sustainable development (Lafferty, 2012, p. 305). His main concern is that liberal democracies in a globalized world continuously function as communities determined by national borders forming competitive entities, whereas sustainability requires a notion of community based on ecological interdependence with an expanded notion of citizenship that incorporates the interests of future generations, the world's poor and (possibly) the existential interests of other species.

Here I employ the notion of democratic impasse to explore the contentious issue of normativity within the pluralistic approach. Significant is how the pluralistic approach in recent contributions has turned increasingly normative. The educational purpose is no longer just to prepare the students for debate on human conflicts of interest with regard to environmental issues, but to turn 'the classroom into a democratic arena for negotiations about how to realise a sustainable future" (Öhman & Östman, 2019, p. 79). The democratic purpose is maintained, but the discussion is

explicitly framed as a concern for a sustainable future. Or the educational purpose may be *sustainability commitment,* "a desire and ability to contribute to a sustainable transformation of our world" (Öhman & Sund, 2021, p. 2), echoing the title of United Nations´ Agenda 2030.

Acknowledging the democratic impasse, the expressions of normativity within environmental and sustainability education should be welcomed. Facing ecological crisis and climate crisis it would be naïve not to acknowledge that ESE is governed by certain values, fundamentally protecting life on earth. Still, in current world affairs the democratic impasse referred to above, prevails, deepening conflicts and contradictions distinguishing ESE as an educational field, premising sustainability issues as controversial educational content. Various aspects of this situation deserves attention and reflection from the research field in the years to come.

Here I will finally suggest that the values in question may be conceived of as resources for an immanent critique of current (education) policy, both domestic and international, available for students, teachers and researchers alike (Kvamme, 2020). The pluralism, conflicts of interests and numerous disagreements – the political dimension, so to say – enters the stage when values are to be specified, priorities are to be made between various interests and concerns, when general claims are to be expressed in transformative actions.

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Dramas of Sustainability

Marianne Ødegaard

One of many challenges for environmental and sustainability education is to engage students in realistic transdisciplinary issues where they can use and develop their agency and emotional reactions for dealing with sustainability dilemmas. With this proposal, I wish to raise the discussion of how role play and other drama activities can contribute to different levels of students' involvement in sustainability, and offer a theoretical frame work of sustainable drama that can be used in transdisciplinary contexts. Classroom experiences and research projects underpin the framework.

The themes of sustainability in the science education curriculum have often been embedded in socio scientific controversies. Being both a science educator and a drama educator, it was natural for me and my students to develop role plays and drama activities to contextualize the controversies and make them more personal and less abstract. By simulating and enacting real life situations students showed empathic involvement in roles of stakeholders in the context of complex decision-making processes involving ethics and risk-taking in socio-scientific issues. These experiences have later guided me in studies of drama and science and the development of a frame work for dramas of sustainability.

Occupied with sustainability, Leinweaver (2015) emphasizes the strength of storytelling. He refers to three types of stories that have been told for generations; the big or mythic stories that help people make sense of the mystery of life and the wonder of being; the middle stories that shape civilization and educate about the organization of society; and the little stories of individual lives and personal exploration and meaning making. Likewise, young people experience the complexity of sustainability on different levels; a personal individual level; an interpersonal socio-cultural level; and an overriding symbolic level, which corresponds to stories of sustainability.

I have outlined a framework of role play and drama activities based on levels of complexity and sustainable storytelling (See figure 1):

- *Little dramas*: On a personal level there are little stories of the individual and how they explore their lives and make their choices. What values and facts influence their actions? Small role plays with individual role cards accentuates the individual's perspective and provides space for discussion and practicing decision-making based on values, ethical considerations and facts.
- *Middle dramas*: On an interpersonal and sociocultural level, middle stories of *us and them* and with a focus of explaining power relationships, organization of society and how culture shapes our collective senses is exercised through plenary role plays. With a common arena, where students enact different stakeholders, collective decision-making and processes of international agreement can be practiced.
- *Big, symbolic dramas*: The big stories of sustainability are on a symbolic or mythic level. They raise important questions and shape our imagination about what is possible (and impossible) in the world. What do wicked problems like climate change mean for our lives? Creating presentational dramas, students can explore and express meaningful issues, confusing affections and concerns with artistic means (Ødegaard &

Øiestad, 2002). By using classical literature, like Ibsen's dramas, as resources, they can relate epic questions to their own modern lives and thoughts of a sustainable future.

In order to illustrate the levels, I have provided examples from classroom studies where scientific facts are linked to and influence affections and actions for instance during ethical decision-making processes. One case study on developing a symbolic drama with the help of classical literature is also presented.

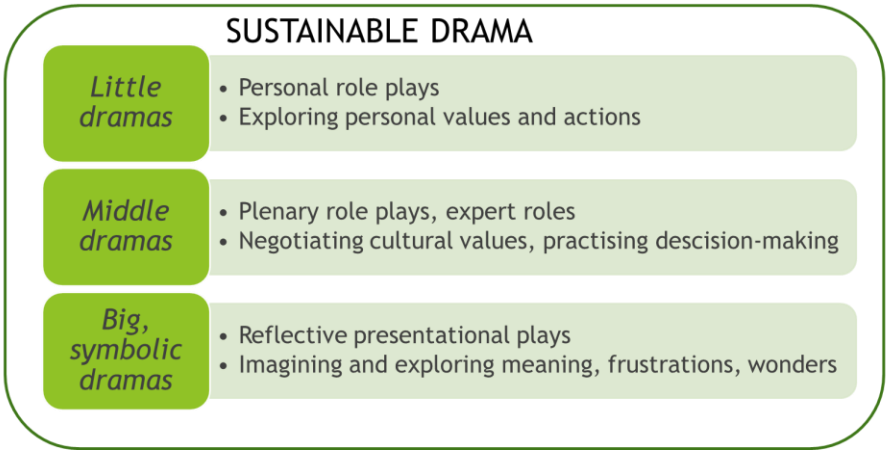

Figure 1: Pedagogical framework of drama for sustainability issues (Ødegaard, 2017)

STUDIES OF SUSTAINABLE DRAMA

And the Water turned to Blood

In a small role play (little drama) with role cards, small groups of five students (age 16) played out a situation of a family dinner where the nearby river turns out to be invaded by poisonous algae that indecently colors the water red. This affects the family members in different ways. One gets sick after bathing, one has his trade as a pig farmer threatened, one is studying the algae in her master's degree, the local tourist guide is afraid of the lack of visitors and a fisherman fears for the fish. The study revealed (Kristoffersen, 2021) that the complexity in the situation initiates high order argumentation using both scientific facts and ethical considerations, critical thinking and socio scientific reasoning.

Climate lawsuit

Parallel to a real-life lawsuit where environmental NGOs sued the Norwegian state for their continued oil production, a science class in upper secondary (age 16) simulated a similar lawsuit as a plenary role play (middle drama). All students were assigned different roles in the court (judges, defence counsels, prosecutors, NGOs, state representatives, witnesses etc.), and they were required to use visual representations (pictures, models, graphs etc.) to underpin their statements. Nybråten (2018) found that the role play encouraged discussions where the students could build on each other's knowledge to create a broader understanding and integrate a manifold of perspectives considering the problem in question.

Sustainable Ibsen

A drama class in upper secondary school (age 17-18) is observed while they develop a symbolic drama about sustainability. The framing narrative is a dystopian fiction story that involves three plays of Henrik Ibsen. The students' mission is to relate the plays to sustainability issues and change the endings in order to explore optimistic and positive sustainable actions.

The little drama (described over) and contemporary issues as school strikes, are used to some extent as part of the drama making process, aiding the students to further explore their Ibsen roles. The relationships between facts, affections and action are in focus as the students try to determine the turning points of the plays. The case study examines how the students use Ibsen's plays as lenses to reflect on our modern world in the era of climate crisis (Øiestad and Ødegaard, in progress).

DISCUSSION

Role play can provide inclusive contexts for socio-scientific issues where students' different voices enrich the learning activity. In order for students to incorporate the complexity of sustainable development issues, they engage in bodily experiences in educational drama. I hope to discuss how relevant my framework of dramas of sustainability can be for practice in the classroom and for research.

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Has Education for Environmental and Sustainability Education Lost its Radical Edge?

Susanne Ress

What happens when radical traditions of thought and practice go mainstream? Realizing that human-nature-relations of extraction and exploitation cannot go on forever lest humanity destroys the foundation of its very own wellbeing and survival on earth has been a nagging noise in global politics for more than 50 years, not the least since "The Limits of Growth" report has been published by the Clube of Rome in 1972. On its heels, many eco-educational initiatives followed (Overwien, 2015), which generated a rich and highly diverse potpourri of theoretical and practical approaches to environmental and sustainability education (ESE) over time (Sauvé 2005), including pioneering ideas of eco-literacy (cf. Orr, 1992), eco-philosophy (cf. Jickling, 1991; Hoffmann, 1994), environmental and health education (cf. Kellen-Taylor, 1998), collectivity and cooperation (cf. Heller, 2004). Coming from a point of radical critique against economic growth as the highway to development, environmental scholars and practitioners alike insisted on the interlinkages of ecological and social issues, paving the way for the three pillars model of sustainability, which provides the widely shared basis for thinking about education for sustainable development (ESD) today (Purvis, Mao, & Robinson, 2019). Yet, particularly those valuing the counter-hegemonic agenda of early-day environmental discourses and activism increasingly doubt that contemporary ESD efforts can foster the kinds of learning needed to alter current trajectories of multispecies extinction. Critical ESE scholars, for instance, fear that ESD policies and programs too easily dismiss innate tensions between economic and ecological objectives, and instead privilege technical, market-oriented solutions over critical inquiry, cultural and emotional attachment, or political action (cf. Jickling and Wals, 2008; Berryman and Sauvé, 2016). Posthumanist and political ecology critiques point to the perseverance of dualistic worldviews that leave colonial logics of (occidental/white/male) domination over the earth's commons unscrutinized although they are at the core of irreversible climatic changes (cf. Lloro-Bidart, 2015; Komatsu Rappleye and Silova 2020; Ress et al., 2022). Moreover, most of ESD's rationalities are firmly embedded in industrial- technocratic-democratic imaginations of climate change-induced materialities, positionalities, and solutions that do not easily align with youth's realities in diverse ecologies (Kendall et al. in progress). Meanwhile, greenhouse gas emissions, resource extraction, air and water pollution, and food system degradation (collectively referred here to climate change and environmental degradation, or CCED), continue unchecked. In short, the radical changes envisioned at the beginning of ESE have yet to materialize. What is more, some argue that these radical ideals have been co-opted by ESD discourses (Tulloch 2013). Has ESE lost its radical edge? If so, how can it be regained?

Many ESD-approaches reflect human-centered, utilitarian earthviews rooted in economic development imperatives and dominionist assumptions about human superiority over other beings. Conceived within neocolonial economic, social, and political constellations, these efforts often omit power relations central to CCED. On the one hand, environmental education efforts (i.e. in schools) largely occlude discussion of capitalist systems of exploitation. Instead, they place responsibility for causing and mitigating CCED firmly on individuals, who have to adopt modernist-scientific technologies and behaviors (in Ghana and Malawi, Ress et al., 2022) or eco- friendly lifestyles (in Germany and Finland, Centeno et al., in progress; Ress and Plötz, in progress), ultimately translating CCED into "problems of the self" (Komatsu et al. 2020, 303). These earthviews reconfigures ecologies as homogeneous and

consumable. Students are often taught that non-human-non-living life-forms have no meaning beyond their immediate economic and reproductive use. Students learn to think about other living creatures as a source of food or energy rather than as kin (Haraway 2016), and to think of non-living landscapes as having no meaning at all. Cattle—once a source of poetry and co-species evolution—become 'beef-on-the-hoof' (Livingston 2019). One tree can be cut for wood and another replanted for future human use because it is not thought of in its particularity, as a cedar or pine, as companion, shelter, comfort, cospecies' homes, or other possible meanings significant in human and non-human lives. Teaching materials rarely give space to modes of meaning-making (e.g., spiritual and ancestral practices, indigenous healing approaches, local leadership and land tenure, historical gathering and planting practices) that lay outside colonial, developmentalist, understandings of human-earth relations.

Education in the anthropocene is deeply political. It requires holistic approaches to knowledge and power and radically different understandings of what it means to be human if we are to live well with earth (Common Worlds Research Collective, 2020). If education about CCED is going to be transformative, it will have to address how CCED is intertwined with local and global politics of cultural alienation, supremacism, and unsustainable growth (Selby and Fumiyo 2014). It will have to problematize the hyper-focus on individual learning, finding new ways of thinking about relationality and context. The international ESE/ESD community has long been driven (discursively and materially) by 'a single idea of modernity' (Machado de Oliveira, 2021), which in practice has long been friable, leaving earth's ecologies in 'capitalist ruins' (Tsing, 2015), and forcing us to look at education differently, less to create "even better" programs, but to capture how teaching and learning is taking on completely new forms (e.g., digitalization), which require much more daring and radical questions. This essay seeks to provoke conversations around a deeper reading beyond one's horizon to form alliances with today's vanguard radicalism present in Indigenous collective experiences (cf. Kimmerer, 2013; Machado de Oliveira, 2021), critical black (feminist) (cf. Imarisha, 2015; Amsler, 2019; Murphy, 2021), and decolonial thought (cf. Liboiron, 2021), valuing difference, dialogue, and conceptual curiosity as a crucial (scholarly) step to revive ESE's radical potential.

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"NORMATI…" "WHAT?" – NORMATIVE QUESTIONS IN ENVIRONMENTAL AND SUSTAINABILITY EDUCATION IN HIGHER EDUCATION CONTEXTS

Ann-Kathrin Schlieszus & Alexander Siegmund

Sustainability issues such as climate change often cause controversies. They consist of wicked socio-ecological problems and complex systemic entanglements which are difficult to discern. Fake-facts and science-based knowledge are sometimes hard to unravel. Besides the fact that scientific knowledge can never be neutral, as it is always socially constructed and culturally embedded in the value and belief system of its time (Berger et al., 2018), the opinions on the political implications of scientific knowledge about climate change are highly controversial. The different sub-aims of a climate-friendly and sustainable development of our world may compete or even impede one another (Spaiser et al., 2017). The priorities we set depend on our values and are shaped by our biographical and cultural background, by the societal discourses of our time and place, by our experiences and interests, etc. People can therefore speak of a sustainable development and envisage very different aims and proceedings individually.

Related to this issue, the question of the role we assign to education in creating a more sustainable world arises (cf. Jickling, 1994): How can and should education contribute to a sustainable development of our society? Should it encourage learners to engage and behave in a sustainable way in the sense of what Vare and Scott (2007) call "education *for* sustainable development" (ESD 1)? If so: What is sustainable behaviour? And how can we avoid the risk to instrumentalize learners? Or should education rather enable learners to think critically and make their own judgements in the sense of an "education *as* sustainable development" (ESD 2)? How then to support learners in developing such skills? And how to cope with positions which are not compatible with fundamental democratic values, human rights, etc.?

As environmental and sustainability education (ESE) is intrinsically linked to normative questions, the underlying normative assumptions need to be explicitly addressed by ESE practitioners. This is getting more and more important, as the field of ESE has become increasingly mainstreamed during the last decades. Explicitly addressing normative questions is especially important for higher education lecturers engaged in ESE, as they prepare future experts and decision makers for their work in manyfold societal fields. But why is it important to talk explicitly about the normative base of sustainability-related topics? If lecturers do *not* address the normative underpinnings of the topics and their teaching, students may reject to get involved with such topics. Furthermore, existing dominant perspectives may be perpetuated, which is one reason for current unsustainable development (Mulder, 2010). Yet, if values are addressed in a discursive and reflexive way, students will feel less urged to justify their (possibly deriving) normative positions and will be more open for a deep study of topics related to sustainable development (Singer-Brodowski, 2019). This can be the starting point for transformative learning experiences which have the potential to alter existing meaning perspectives and open up new horizons for our future (Mezirow, 1997).

Regarding normativity in ESE in higher education institutions, there are a lot of questions which are not yet explored exhaustingly. One reason might be that values may be a conflictual point particularly in higher education, as many lecturers have a double role researcher-lecturer and adopt a positivist view on knowledge. They feel bound to the ideal of a neutral, objective science, which is one of the central epistemological ideals of modern Western science,

and try to uphold the idea of a clear separation between facts and values which was proposed by Max Weber at the beginning of the 20st century (Schneider et al., 2019). This may influence whether they as lecturers adopt (supposedly) neutral positions or whether they take clearly normative standpoints and encourage critical discussions upon these with their students. Therefore, examining the meaning and the ways of dealing with values in ESE especially in higher education contexts is interesting and can open up new perspectives to ESE research and practice.

On a theoretical level, further research could be done to examine the following questions: How do lecturers understand normativity in the context of ESE? What kind of normativity and how strong normativity can be allowed for in formal education? (How) Do the perspectives differ between the Global North and Global South? Which are challenges or opportunities coping with normative aspects in teaching? Which topics are especially controverse or closely linked to values? Which are the most crucial values underpinning ESE? If the core values related to ESE differ between different persons, is there a common normative core of ESE? Are there values which all can agree on? And, on the other hand, which are the most controversial values related to ESE?

On a practical level, it would be important to have a closer look at questions like: How do ESE practitioners deal with values in their teaching, especially in the field of higher education? (Why) Do they think this is important? How does the educator adopting more pluralistic or more normative standpoints influence what learners learn? How can the discussion about norms and values catalyse critical reflection? How can educators help learners to scrutinize their own normative orientations as well as widely spread societal values which may be one reason for current unsustainable development? How can they support critical discourse and encourage controversial discussions in higher education classes? How can they cope with students' emotions when discussing contentious topics which touch the essential of what we are?

Discussing these questions could not only contribute to the further elaboration of an important topic in ESE on a theoretical level, but it could also help to identify inhibiting and enabling factors for the design of open and reflexive learning environments in ESE teaching. This could foster transformative learning experiences in higher education courses, which may lead students as designers of our future societies to a more open, creative and reflexive way of addressing sustainability problems.

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Resistance and Didactic Implications for Education for Sustainable Development

Linnea Urberg

Humanity faces the greatest problems of our time, with mass extinction, climate emergency, and the disruption and breaking point in the relationship between nature and society. Nevertheless, there are large groups in society that resist so-called 'sustainable habits' and 'sustainable identities" that could be seen as the mainstream sustainable development discourse. I argue that we need new tools, theories and empirical research to understand youth resistance to education for sustainable development and the potential of didactics to address this resistance.

Climate scepticism and resistance against the discourse of sustainable development are not only found in schools and among young people but even world leaders express their doubts. When the United Nations' climate report by the IPCC (Intergovernmental Panel on Climate Change) was published in 2013 both the US President at the time Donald Trump, who had called climate change a "hoax" before, as well as Australian Prime Minister dismissed its results (Ogunbode, Doran, & Böhm, 2020). Resistance and contradictions are expressed not only against but also within the discourse of sustainable development. In her speech to the UN Secretary General Antonio Guterres, Katowice 3/12, 2018, Greta Thunberg states: "So we cannot save the world by following the rules, since the rules need to be changed". It can be said that Greta exercises resistance within the discourse since she does not find its practices to be suitable to solve the issues at hand. The resistance may also be based on a difference in antagonism between groups, with some groups justifying the cause of environmental problems on the grounds that the root causes lie in our current social, economic and political systems and in the worldviews, institutions and lifestyle choices that support them (Fien, 1993b). Young people's resistance to sustainable development and to measures implemented to increase sustainability is reflected in the social debate and in educational practice. To act on climate change and sustainability can therefore not only be regarded as an agreement on a government level. It requires an understanding of the resistance that takes place within educational spaces and to get familiarised with the logic sceptic young people express to engage them in issues that affect the common future and climate change. Youth resistance is a blind spot where student engagement has been taken for granted. Johan Öhman and Marie Öhman (2012) conclude that there are risks in harmonising the concept and management for sustainable development and that the subject's ideological tensions and conflicts of interest may be neglected. Louise Sund and Johan Öhman (2013) suggest that we need to rethink the ESD field to reveal the political dimension and unmask it to re-politicise education for sustainable development. Didactic strategies are required to reverse the resistance and be able to use its resistance potential. Environmental psychology research can explain the psychological mechanisms of resistance and there are studies that indicate how political perceptions and sociocultural factors can generate and influence resistance (e.g., Krange, Kaltenborn, Hultman, 2019; Ojala, 2013; 2019; Grønhøj & Thøgersen, 2011). There is a lack of didactic approaches, theories, and guidelines for dealing with resistance. Didactics can be seen as a process involving learning, socialisation, and subject creation. Through the process, meaning making or meaning creation can take place (Öhman, 2014). A meaning offering becomes relevant based on the processes of learning and socialisation that explores, and didactics can offer tools and recommendations for addressing resistance constructively.

I suggest that young people's resistance can be theoretically understood through Pierre Bourdieu's forms of capital but with the addition of environmental capital (see e.g., Karol & Gale, 2004). The environmental capital may coincide

with cultural capital and describes the objective resources for sustainable actions and habits. Youth resistance is understood here through Pierre Bourdieu's concept of capitals, most notably the notion of symbolic capital which implies recognition of the individual's aggregated capital by the social milieu. The theory highlights resistance as an effect of the involuntarily or voluntarily elimination of an individual or group's environmental capital by the social field (Bourdieu, 1977, 1994/2014). The theory can offer strategies for dealing with the increased polarisation around sustainability issues and consist of a ground for how education systems and teaching methods can deal with the complexity of sustainability issues in relation to young people's resistance. A blind spot that is urgent to explore is what concrete didactic methods can be operationalized and recommended to locate and respond constructively to resistance.

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SUB-THEME 2

EMOTIONALLY CHALLENGING AND EXISTENTIAL ISSUES IN TEACHING AND LEARNING PRACTICES

Johanna Lönngren, Leif Östman & Ellen Vandenplas

Severe and far-reaching sustainability problems can cause strong feelings of worry, anxiety and ecological grief. They can be experienced as existential in the sense of putting our mode of being, attitudes towards life and the meaningfulness of our lives at stake. During the seminar, the discussions related to this theme were based on an understanding of the complex challenges for teaching and learning posed by emotional reactions and existential experiences in environmental and sustainability education (ESE). Before and during the seminar, the following questions served as prompts for reflection:

- How can educators prepare for recognising and coping with such existential experiences?
- How can ESE research succeed in providing guidance for tackling the challenges posed by emotional and existential experiences? Where does ESE research fall short in providing such support?
- To what extent is the growing attention for the emotional dimension of ESE blurring the differences between a psychological/therapeutic and a pedagogical/didactical approach?
- What theoretical and methodological challenges need to be tackled for investigating (how students and educators cope with) emotions and existential experiences in ESE?
- Which theoretical approaches may be useful to progress ESE research on this topic?
- How are these issues perceived and dealt with in different areas of the world?

We started the seminar discussing overarching issues that were prominent in many of the essays accepted for this theme. First, many of the essays focused on negative emotions, such as climate anxiety. This observation led us to reflect on the boundary between pedagogy and therapy: Who should have which responsibilities for emotions and existential experiences in different ESE settings? How far does the responsibility of teachers stretch in helping students and pupils deal with these experiences? And what could be a pedagogical approach to emotions and existential experiences in ESE? Second, several essays stressed the importance of arts- and drama-based pedagogical approaches and we discussed why and how such approaches could be particularly fruitful for dealing with emotions and existential experiences in ESE. Third, the essays raised important questions regarding which theories and methodologies could be fruitful in researching emotions and existential experiences in ESE.

As we started our discussions, we experienced a need to (a) define how we want to use the terms *emotion* and *affect*, both of which carry multiple meanings depending on which research field they are used in, and (b) better understand how emotions and existential experiences may be related in ESE research and practice. Regarding the first point, we agreed on a tentative conceptual framework that emphasized the distinction, but also the connection, between affect and emotion. We conceptualized affect as "a body's registered sensation of a moment of existing relationally, interactively, in the world" (Gould, 2010, p. 27) which we, later, can reflect upon. Affect is thus a bodily experience that takes place before we are aware of it. Once we start to reflect upon affect, it is *transformed* into

emotions. This transformation occurs through cognition and involves social, cultural and linguistic sense-making. Thus, we conceptualized emotion as affect that is made meaningful in a specific socio-cultural context. Regarding the second point, we reminded each other to consider both emotions and existential issues in all discussions as the two concepts are related but not synonymous: existential issues often come with emotions, but not every emotional experience/expression is related to existential issues. We did not reach any concrete conclusions regarding how the two terms are/should be related in ESE and we suggest that this question merits more research.

In addition to the topics recognized at the beginning of the seminar, several topics emerged as central during our discussions. One of them was the importance of affect and emotions in climate change education, which has been shown by several ESE researchers (e.g., focusing on climate anxiety and the importance of constructive hope, Ojala et al., 2021). In connection to climate anxiety, we also discussed the role of care in education. Acknowledging that teachers can never be therapeutical experts, we concluded that care (rather than therapy) should be central in ESE. In fact, care for students, the world and all living beings are necessary elements not only of working toward sustainability, but also of ESE teaching and learning.

We also discussed the importance of acknowledging affect and emotions in all education, but especially in relation to sustainability and climate change education, to counteract the dominant policy and cultural discourses stressing cognitive processes and learning outcomes (e.g., Hufnagel, 2017). Thus, we saw an urgent need for offering alternative ways of perceiving and approaching learning – involving not only knowledge and competences, but also affect and emotions. In other words, we need to understand learning as involving both bodily and cognitive processes and resulting in outcomes that include bodily as well as intellectual dimensions.

Another topic raised and discussed in detail focused on the opportunities and risks of addressing and "provoking" affect, emotions, and existential experiences. Many significant and life changing moments involve strong emotional and existential experiences and, therefore, provoking strong affect and emotions in safe environments could have many positive pedagogical consequences. For example, it could create strong engagement for sustainability and lead to transformative learning. It could also trigger reflection and changes in how one views personal and societal ways of living and working together. Further, explicitly dealing with emotional and existential experiences, students and teachers can develop a common language for talking about, making sense of, and dealing with these experiences. However, addressing and provoking strong emotions may also involve risks since students are asked to reveal themselves, not only as students, but as *whole persons.* Students are asked to make themselves *vulnerable* in front of their peers and teachers, which could lead to painful (or even traumatic) experiences. Finally, such an educational practice may create situations in which certain emotions and existential experiences are manipulated to achieve certain desired (according to dominant social, political and economic values) learning outcomes. Acknowledging these risks, we emphasized the importance of making didactically and ethically wise judgements regarding whether, when and how to address and/or provoke emotions and existential experiences and when and how to seek help from professionals trained in psychotherapy. We also stressed that we need more research on teachers' willingness and capabilities to make these judgements and on how such judgements are *already* made in different educational contexts today.

Finally, much of our discussions centered on *how* we can research emotions and existential experiences in ESE. Importantly, we identified challenges related to researching complex emotional experiences and interactions solely

based on psychometric instruments (e.g., measuring achievement emotions or emotional intelligence). Rather, to research how teachers and students bring their whole persons into ESE classrooms and informal learning situations, we need to draw on, combine, and develop diverse theories and methods, a task that needs to be prioritized in the coming years. Together, we may thus be able to paint a colorful and multilayered picture of the complex roles that emotions and existential experiences (can) play in ESE teaching and learning.

In conclusion, we identified a huge, mostly unexplored, potential for ESE research and practice when it comes to understanding and promoting students' emotional and existential experiences of sustainability challenges – and how educators can leverage these experiences for transformative learning. As a starting point for future research in this field, we offer the following tentative theoretical and empirical questions:

1. How can/do teachers deal ethically and educatively with evoking and provoking affect and emotions in the context of ESE?
2. How can we empower students as individuals and groups to attend to, reflect upon, and make meaning of the affects and emotions?
3. How can we understand the risks and opportunities of enabling the (whole) person to emerge in the ESE classroom?
4. What are the pedagogical challenges and opportunities in confronting existential experiences?

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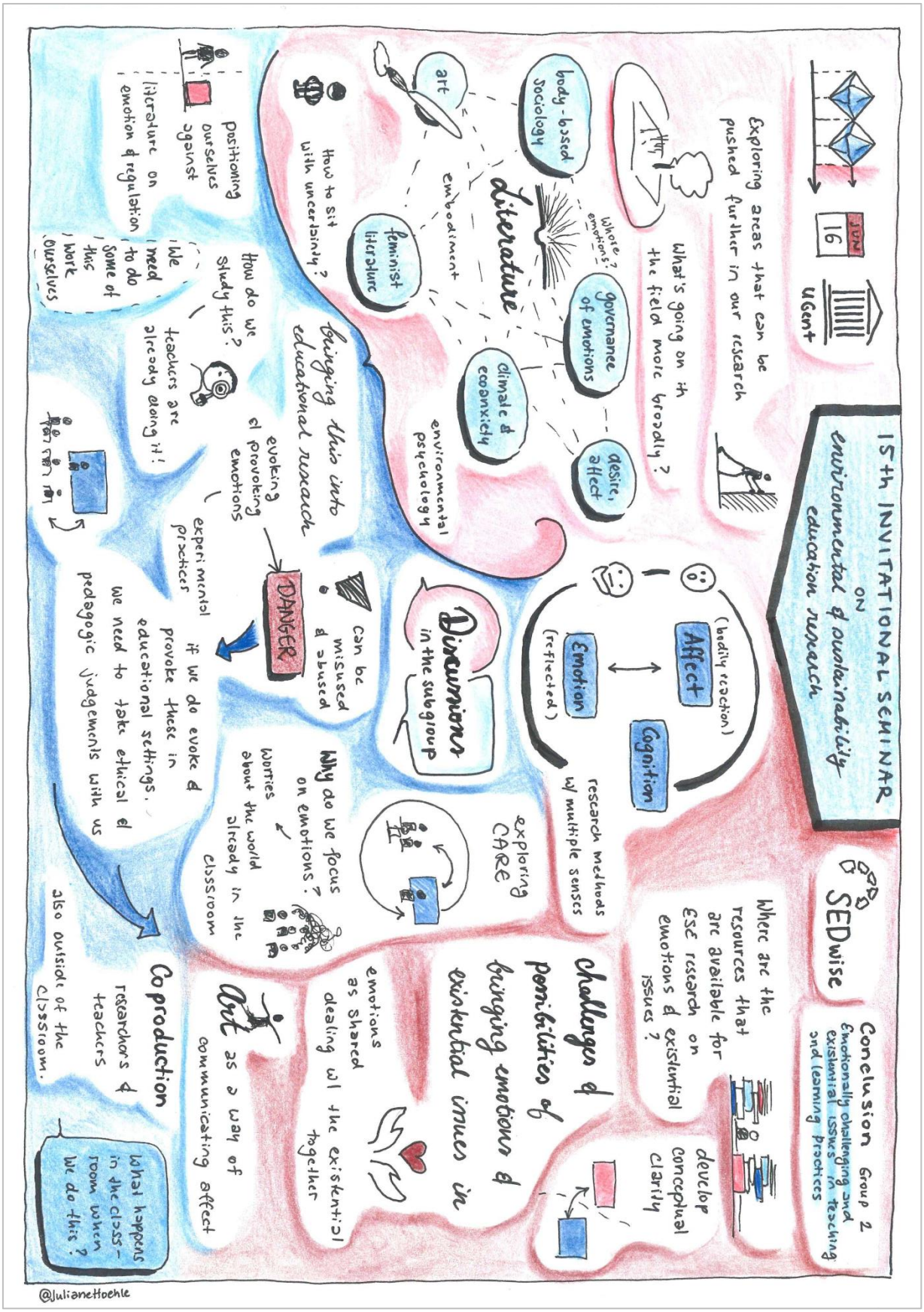
15th INVITATIONAL SEMINAR
ON
environmental & sustainability education research
JUN 16
UGent
SEDwise
Conclusion Group 2
Emotionally challenging and existential issues in teaching and learning practices
Exploring areas that can be pushed further in our research
What's going on in the field more broadly?
Where are the resources that are available for ESE research on emotions & existential issues?
develop conceptual clarity
challenges & possibilities of bringing emotions & existential issues in together
Whose emotions?
governance of emotions
desire, affect
climate & ecoanxiety
environmental psychology
body-based sociology
art
embodiment
feminist literature
literature
(bodily reaction)
Affect
Cognition
Emotion
(reflected)
research methods w/ multiple senses
exploring CARE
Dimensions in the subgroup
Why do we focus on emotions?
Worries about the world already in the classroom
can be misused & abused
DANGER
if we do evoke & provoke these in educational settings, we need to take ethical & pedagogic judgements with us
bringing this into educational research
evoking & provoking emotions
experimental practices
How do we study this?
teachers are already doing it!
How to sit with uncertainty?
positioning ourselves against
literature on emotion & regulation
We need to do some of this work ourselves
emotions as shared dealing w/ the existential
Art as a way of communicating affect
Co-production
researchers & teachers
What happens in the class-room when we do this?
also outside of the classroom.
@JulianeHoehle

Facing Extinction: Educating with Art for Living with the Dead?

Juliette Clara Bertoldo

> It is only with the heart that one can see rightly; what is essential is invisible to the eye.
>
> Antoine de Saint-Exupéry, *The Little Prince*

> We must live well with the dead if we are to live well at all.
>
> Margrit Shildrick (2020, p. 178)

The last male northern white rhino died in 2017 (Vitale, 2019). Raised in captivity, the 45-year-old rhino named Sudan passed away on the dusty floor of the Ol Pejeta Conservancy in Laikipia, Kenya. The singularity of Sudan's death abruptly reinvokes the abysmal loss of tens of thousands of species going extinct every year, at a rate 1000 times higher than the average rate of extinction (Kolbert, 2014). We are entering the sixth mass extinction of a different nature than the preceding five, for it is almost entirely man-made. This unprecedented anthropogenic mass-death phenomenon does not only concern the loss of individual living organisms, but the destruction of long-evolving life-sustaining relationships between and across species. Not only are these formations breaking apart in vast number, but entire modes of feeling, thinking, acting, and being are debilitated, some lost forever (Tsing & al., 2017).

The deathscapes of the Anthropocene do not exempt humans – 'they ripple, they spread and we're all implicated in them' (Rose & van Dooren, 2009, para.48). The vast diversity permeating the living world, which inspires awe and creative response, is presently accompanied with a feeling of drastic devastation. Youth are denied from experiencing and learning with the animal and plant lives and their lush habitats that move into extinction. To learn about the community of beings and ecosystems that contribute to and support life is a to learn about an inevitable experience of loss and death (Affifi & Christie, 2019). With this comes the realisation of all that will never be known, that which will remain forever missing, misunderstood, or interrupted before it could come into being. Hence, while the world is bursting into absences, growing-up ceases to merely be an educational matter. It becomes an existential conundrum of learning how to survive in the midst of this absence, as we are all 'being overtaken by processes that are unmaking the world that any of us ever knew' (Rose, 2013, p.208).

This concern raises urgent educational questions, in particular for those who compel educators to consider sustainability, environmental priorities, and, as Todd (2020) articulates, to reflect on youth's affective and existential worries in confronting a perishing world. Drawing specifically on 'climate sorrow', she asks whether education can become a site for youth to 'stay with' difficult feelings about the future by enabling them to develop a living relationship to the more-than-human world in the present?' (p.3). My own concern in this paper emanates from Todd's question, and is an invitation to think specifically about those often overlooked relationships between what lives and what has passed.

Within a relational ontology, I situate these questions on death and correlated existential concerns from the standpoint of posthumanism (e.g. Braidotti, 2013; Haraway 2016) and environmental humanities, drawing specifically from emerging philosophies of extinction (e.g. Rose, van Dooren & Chrulew 2017; Heise, 2016, Grusin 2018). In line with these theorists, I too resist the thick dividing split between life and death for rethinking death in

non-normative and more-than-human terms, thus not merely as non-existence or lack, but as a place of generativity for re-membering those who have been, literally, dis-membered. Thus, my intention is not to define what death *is* or to prove the existence of other-worldly creatures, but to explore the kinds of relationships that may be afforded between these different 'modes of existence' (Despret, 2021, p.7). Indeed, the way we live in the present is affected by the way that others – human and non-human – have died before us, and by the way that we ourselves shall die. In other words, we are 'interwoven into a system in which we live and die *with* others, live and die *for* others' (Rose, 2011, p.32). From this perspective, our sensibility to what has died may inform the way we will defend the rest of the living – a line of thought that Education and Sustainability Education Research (ESER) is well positioned to explore. In fact, if one of ESER's endeavours is to support students in feeling part of a rich multi-layered world for learning how to care and cope in front of the massiveness of the environmental genocide, then acknowledging the deep interconnections we have with those lives left behind is to my view integral to such educational process.

My wish with this proposal then is to open a discussion for ESER on the possible pedagogical practices involving art drawing from contemporary visual arts practices to explore these issues (see, e.g. Bertling, 2021); the possible ways for thinking about death pedagogically, creatively, affectively, and sensuously. The following are some of the questions I am grappling with: How shall we engage our imagination so as to reach into these death places, while learning to 'stay-with' (Haraway, 2016) the emotional turmoil they engender? What worldly acoustic are we left with when the singing of an entire bird species ends? In what ways does the disappearance of Sudan the Rhino transform the sensible perception of our students' sensate world? How can we see the crossovers that connect their deaths with our lives? 'How do we keep our heart open to a dying earth' (Affifi & Bertoldo, pers.comm.)?

In raising these question here, I propose, as an initial impulse, that aesthetic experiences may offer something different to address the reality of harrowing and complex ecologies of death (Affifi & Christie 2019). Because art in general does not shy away from those difficult feelings, while simultaneously giving rise to creative renewal, it holds the potential to approach death as a generative force. Art history provides an infinity of examples in this regard, from classical representations of death (e.g. vanitas paintings and funerary art) to contemporary art, often raising ethical and political issues in questions of mortality (Townsend, 2008). More specifically, contemporary environmental art, casting suspicion on human-exceptionalist conceptions of death while blurring the contours between the living and non-living (e.g. Radomska 2020; Yoldas, 2015) covers ground worth of exploration for the present purpose. With this in mind, artistic experiments might stir desire for actively speaking-with/dancing-with/painting-with those who have never been known, 'for retracing connections to the ones we have lost, creating stories and meaning, and keeping the ecology alive' (Affifi & Bertoldo, pers.comm.). A space for dwelling in relation with those 'absent presences' (Shildrick, 2020), whereby sensing ecological grief and experiencing beauty are part of that same process that can heal the fractures of fractured relations precisely because it does not deny them. Indeed, the ecology of emotions and related existential inquiries are complexly tied to death and the deceased other: the wounds, the suffering, the pains and joys engendered, move alongside one another, each swirling to their own rhythms, flowing in and out of one's life in unpredictable ways, uncontained by linear temporality. So, how would those pedagogies, – ones that allow for polarities to exist together, and respond to the integrated complementarity in things – look like? That is the *raison d'être* of this proposal: a call for progressing research on

such pedagogical opportunities for relating and responding ethically[4] to those absent presences in the midst of what sometimes might feel – for young people and their educators – the remains of a diminished past lingering toward a vanishing future.

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[4] The body of scholarship mobilised here and in my wider work withdraws from an understanding of ethics understood not in terms of adherence to an abstract moral code but to building conditions for affirmative relationships.

Futures Literacy, Arts, and Sustainability: A Powerful Match?[5]

Petra H.M. Cremers

EDUCATING FOR SUSTAINABILITY

With the aim of actively addressing complex sustainability problems, higher education programmes are embracing key sustainability competencies such as critical thinking, anticipation and self-awareness (Pacis & Van Wijnsberghe 2020, UNESCO 2017). However, focusing on competencies alone may not be enough, as overwhelming emotions such as fear and anxiety can contribute to action-paralysis, numbness and denial in relation to climate change (Van Boeckel 2021). Also, the phenomenon of 'blinding insights and lock-ins' can cause people to "become so stuck in their own often taken-for-granted and normalized ways of thinking and acting that they fail to see how this colours their judgment and narrows possibilities" (Wals and Peters 2017, p. 47). Therefore, it is critical for education and research to explore how to overcome, as Larsen (2021) puts it, "the blind resistance to change and the poverty of imagination" and to foster students' (and teachers'!) hope and resilience.

FUTURES LITERACY AND ARTS-BASED METHODS FOR TRANSFORMATIVE ENGAGEMENT

Potentially useful concepts and educational strategies for discovering new possibilities and thereby fostering hope and resilience in the midst of complexity and uncertainty are Futures Literacy and Arts-based methods for transformative engagement (Pearson et al 2018).

Futures Literacy

One possible way to challenge our ways of thinking and acting is to develop Futures Literacy (FL), the capability to use and imagine multiple futures for different purposes and contexts (Larsen, Kæseler Mortensen & Miller, 2020). FL stresses the importance of approaching the future not only from a perspective of planning and preparation, but also in a more explorative way. This is what Miller (2018) describes as being able to walk on two legs. As Peterson et al (2020, p. 46) explain: "We ought to also take a step back and look for emerging phenomena that do not make sense yet. […] If we let go, examine, or deconstruct certain assumptions about the future, we may become aware of biases or strongly held beliefs we were taking for granted, and we may open up for spontaneity and other unforeseen possibilities".

Diversifying the ways we view the world can help us to overcome fear of change and to welcome uncertainty and novelty as a resource for creativity and imagination (Larsen et al., 2020). In the words of Bergheim (2021), when he reflects on acquiring FL as a capability: "even if starting from a deep-seated fear of the future, new hope, new confidence and new action can emerge".

Arts-based methods for transformative engagement

Learning to view the world in new ways is a process of transformation, a shift in mindset, values and awareness of oneself (Mezirow 1991). At a collective level, transformation can be manifested by a shift in cultures or systems

[5] The author would like to thank Jitske Gulmans, Loes Damhof, Elles Kazemier (UNESCO Chair Futures Literacy) and Jan van Boeckel (Research Group Art & Sustainability) for their valuable contributions to this essay.

(Merriam & Kim 2012). It changes *who* we are and *how* we are. A change in who we are involves identity work: forming, repairing, maintaining, strengthening or revising our self-meaning (Alvesson & Willmott 2002, p. 626). How we are refers to being in and relating to the world we live in (Biesta 2020). Horlings (2015) describes this inner transformation in relation to sustainabilty as 'change from the inside out' and refers to this as 'the inner dimension of sustainability'.

Research suggests that arts and arts-based practices are particularly well-suited for exploring such inner-dimensions (Horlings 2017; Kagan 2012). Making and sharing artefacts enables processes of playful experimentation and 'thinking with our hands' (Sheridan et al 2014). This, in turn, can facilitate and trigger individual and collective sense-making and knowledge creation (Groth 2017). Biesta (2020 p. 119) provides yet another perspective: "… art is not simply a bridge towards the world, but perhaps, first of all, a way through which the world can enter into dialogue with us […] if, that is, we let art teach".

ESE RESEARCH

How can ESE research provide guidance?

Current research on FL, for instance at the UNESCO Chair Futures Literacy at Hanze University, focuses on the design, facilitation and impact of educational interventions, based on theories of transformative and collective learning and identity work (Kazemier et al 2020). Currently the Chair investigates the relationship between FL as a capability and the Key Competencies for Sustainability.

Other researchers focus on the use of arts-based methods in relation to sustainability education, such as Jan van Boeckel with the research group Art & Sustainability at Hanze University (van Boeckel 2021), Natalia Eernstman at Plymouth College of Art and Arjen Wals at Wageningen University (Eernstman et al 2021). The Copenhagen Institute for Futures Studies is launching an Arts & Culture Focus Area in relation to Futures Literacy (Larsen 2021).

However, the interrelationship between FL, arts-based methods and ESE has got little research attention so far. Based on the above, the hypothesis seems justified that they can strongly enhance one another especially with respect to the development of learners' inner sustainability. Research could shed light on the way in which, and to what extent FL and arts-based methods can be integrated in the design and facilitation of ESE activities.

Theoretical and methodological challenges

When studying transformative (learning) processes, two methodological challenges can be identified (among others). The first one is that a transformative learning process often is a journey that lasts longer than the designed educational activities or experiences within a training programme. Moreover, the journey is likely to be different for every participant and a large part of the learning process will be emergent, depending on activities or situations that the learner engages in or encounters in everyday life. This makes it difficult to capture learning when it occurs.

The second challenge is that researching transformation is often a transformative learning process in itself (Merriam & Kim 2012). Reflective activities in an educational programme can be part of the learning process and at the same time yield data that provide an insight into the impact of the learning activities or experiences. The challenge is how to capture these reflections in such a way that it benefits the learners as well as the research.

The overarching questions here are: What would be an appropriate methodology for really capturing the transformation of inner sustainability and how can this be related to the designed and emergent learning activities or experiences?

Possible research pathways

Exploring our hypothesis that FL, arts-based methods and ESE could enhance one another, along with the development of appropriate research methods could potentially yield powerful educational strategies for maintaining hope and developing resilience. And this, in turn, could make a difference for our planet. As Jane Goodall puts it: "Hope involves envisioning the future while recognizing the inevitability of challenges. It enables us to keep going in the face of adversity" (Goodall & Abrams 2021, pp. 8, 26-27).

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Anthropocenes, Crises and Sustainability: Educating the Temporal Imagination in the Era of Climate Change

Keri Facer

The invitation to this seminar invokes a particular temporal frame – the 'climate crisis' with its image of temporal rupture – as a starting point for inquiry. Other seminars and events invoke the challenges of the 'anthropocene' (a new temporal marker) or invite contributions to the creation of sustainable 'futures' or social 'transformations'. The language we use to think about the entangled ecological, climactic, economic and political problems we face is drenched in temporal references and structured through distinctive temporal frames such as 'ten years to save the planet'. Ideas about time are central to questions of emotion and affect in teaching and learning practices and different temporal frames - urgency, delay, apocalypse, regeneration – generate powerful emotional registers for considering questions of personal and social agency in the context of climate change (Theme 2). Ideas about time and change are also at the heart of concepts of 'transformation' and indeed, transformation without a concept of time, is impossible (Theme 3).

My argument here is that we now need to turn our attention towards understanding how these and other temporal frames structure and delimit the nature of the problems we present to students as well as to the as-yet unexplored potential for working with diverse temporal frames as a means of opening up new sites of dialogue and collective agency.

To provide some rationale for this approach:

How we think about time - and use time to think with - matters. Our temporal imagination shapes our understanding of how the world works and our perceptions of how and whether it might change (Adam, 1990). For example: if we think of speed or slowness as a marker of success; if we see the world as moving along a trajectory where some people are 'ahead' or as a place of many different parallel ways of becoming; if we imagine the future as a site of novelty or a repetition of what has already happened; if we think with the timescale of a single life or the deep time of generations - all these temporal frames influence who and what we value, direct our attention in particular directions, and tell us particular stories about our relationship to other people, species and times (Adam & Groves, 2007; Mbembe, 2001; Nanni, 2012). As Norgaard has demonstrated, these temporal frames are particularly important in determining whether and how we pay attention to questions of ecological crisis and climate change (Norgaard, 2011). Conflicting temporal frames also underpin conflict over climate change (Hulme, 2017); and what Bastian calls our 'fatal confusion' about how to 'tell the time' in the era of ecological crisis, is significantly impeding our collective capacity as a species to respond to the 'slow emergency' of climate change (Bastian, 2012).

People don't all think about, experience or use time to think with in the same way (Adam, 1998; Birth, 2012; Chakrabarty, 2008). Different historical, social and cultural conditions position people (sometimes violently) in very different temporalities (experiences of time) and tempos, some living accelerated lives, others lives of enforced waiting (Sharma, 2014). Equally, our temporal imagination is influenced by the social and cultural resources – the media, education, cultural and artistic representations and daily conversations – available to us (Zittoun & Gillespie, 2016). This means that our temporal imagination is both amenable to influence and education and is situated in

particular historical and cultural conditions, and so is subject to change as conditions change (Adam, 1998). There may even be a time lag, in which the ways of thinking about time that we have available to us are less than useful for the historical and cultural conditions in which we find ourselves. This, indeed, is what the cultural theorist Margaret Archer argues in her analysis of changing modes of reflexivity over different historical periods. She makes the case that the forms of individualised calculative predictive rationality (such as cost-benefit analyses, forecasts and modelling) that worked in the relatively stable conditions (for some) of European modernity, are not adequate for contemporary societies of rapid change, feedback loops and critical uncertainty (Archer, 2012); see also (Giddens, 1994).

This gap between temporal imagination and historical and cultural conditions is nowhere more evident than in the social and political response to the questions raised by human induced and rapid climate change. Confronted with a deep-time ethical phenomenon, involving the interactions of multiple species over many different timescales, demanding a balance of responsibility between present and future generations, with conflicting pace and speeds of impact for different populations, our societies and our politics have struggled (Yusoff, 2013). Learning to live in these new conditions, therefore, requires a fundamental transformation of the temporal imagination (Ghosh, 2016).

A new research agenda is required, one that is able to move towards both theoretical and empirical gains in exploring how we might work (and play) with time in ways that are adequate to these conditions. Theoretically, we need a much more elaborated language and conceptualisation of time in education. Here we can draw on the emerging philosophy of time in education (for example, the work of (Aldaheff Jones, 2017) as well as the rich thirty year history of Temporality Studies. Empirically, however, we have a very long way to go. We need a better understanding of how time is 'taught' in schools – both formally, within curriculum and informally, through the timescape of the institution. There is also a case for an experimental practice that develops new ways of 'telling the time' and which might draw on public arts practices such as the *Clock of the Long Now* to Olafur Eliasson's melting icebergs at the Paris Climate Summit to the planting of the *Future Forest* outside Oslo.

Taken together, these theoretical, empirical and experimental trajectories are needed if we are to educate a temporal imagination adequate to reframing 'the era of climate crisis' in ways that cultivate both dialogue and opportunities for personal and collective agency.

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Closing the Gap Between Theory and Practice: How to Implement, Assess and Detect Transformative Learning Approaches?

Lise Janssens & Tom Kuppens

The UNESCO Berlin declaration of 2021 states that the time to act and react for sustainability and climate action is now (UNESCO, 2021). Education for sustainable development (ESD) plays a critical element of supporting the transition to a sustainable future (Gómez et al., 2015) and the approach of transformative learning (TL) is mentioned as the way forward to teach and learn for sustainability (UNESCO, 2021). As defined by Morrell and O'Connor (2002), transformative learning causes a profound structural shift that dramatically and permanently alters our way of being in the world. It is a process that results in a significant and irreversible change in how a person experiences, interacts and conceptualizes the world (Hoggan, 2015). The process starts with a trigger that creates a disorienting dilemma, i.e. an emotional feeling that creates a strong enough irritation, transforming a first stable situation into a semi-stable state. When the situation feels safe enough, the learner has access to more resources like creativity to meet the challenges and to move on to a new stable state (Förster et al., 2019). However, integrating the approach of transformative learning in education is challenging and requires educational reforms (Joubert & Slabbert, 2017). But educational systems worldwide are complex, rigid and strongly traditional; therefore, change within a school setting is not easy (Kovacs, 2018). At the moment, there is an urgent need within the research domain of transformative learning to focus on 'how' creating 'the change' in educational systems , 'how' to teach in a transformative way, how to recognize transformative moments in teaching/learning and 'how' to assess these practices. Until now the approach of transformative learning is mostly only theoretically addressed and data on cases or promising examples are limited (Joubert & Slabbert, 2017). This gap forms a significant boundary between research and practice. Therefore, future research should focus on the implementation of transformative learning in practice, recognize transformative situations and build up a common understanding on how to assess the impact of this pedagogical approach. Time and space are necessary to address, reflect and recognize opportunities to transform. The assessment and recognition of transformative learning causes however a disorienting dilemma on its own for the research field (Searle et al., 2021). Questions like 'How to embody assessment within transformative learning', ' How to recognize transformation in (or even out) the classroom?', 'What do we want to assess?', 'How to determine what to assess?', 'How to capture the whole process of transformative learning in assessment?' and 'What link could exists between assessment of the impact of transformative learning approaches and the evaluation of schooling practices?' pop up. Some research exists on how to 'measure' or investigate parts of the transformative learning process like critical and reflective thinking (Savicki & Price, 2021; Taylor, 2017) but capture not the whole process. Furthermore, up to know mostly qualitative approaches, for example narratives, interviews, journal writings, are used in research to detect the outcomes of transformative learning. Some exceptions are the 'Kember's Critical Reflection Questionnaire', the 'Learning Activity Survey, the 'Transformative learning Survey' and the 'VALUE' rubric', which use a quantitative approach to assess the impact of TL (Romano, 2018). However, they all have severe limitations: they cannot be used without additional qualitative instruments, they only capture parts of the process without detecting a whole transformation or they lack construct and factorial validity. Furthermore arts or better to call it creative expressions (as the focus is on the process of expressing emotions and feelings rather than the output

of the art itself) could also play an important role in both education and researching transformative learning approaches for sustainability. A central question here is what can be learned from and by 'art'?

If research wants to overcome the black box, the discussion on how to do this needs to start now. Overcoming these barriers and discussing the questions above can cause a positive ripple effect regarding the implementation and recognition of promising examples. This can move the field 'forward'. Ones it is clear how we can 'measure' the impact of transformative learning and detect transformative approaches in learning, it is also more easy to detect and learn from the promising examples. Ultimately this can contribute to 'the change we want'.

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An Agenda Without End: The Paradoxes of Growth and Sustainable Development for Marginalized Communities and the Possible Assimilation and Revision of The ESE Agenda in the Global South

(Observations from Western and Central India – Banswara, Rajasthan & New Delhi)

Saransh Sugandh & Mohammad Kaleem

While climate change and the impending as well as continuing changes in our natural world necessitate a reaction of doom-and-gloom, especially in younger population groups, there are parts of the global south that are already reeling under ruinous changes- man-made as well as natural that continue to make rural and urban communities vulnerable. These impacts are most acutely felt by children. The agenda of education everywhere has been updated- sustainability and its many dimensions are definite talking points but the irony of it all perhaps often goes unnoticed, when children of migrant parents and daily-wage labourers learn about sustainability practices through mobile non-formal structures as their parents toil in the sun, pushed to the edges of a city or rural habitation in the name of development. Land is being acquired across the southern economies, especially in countries like India, with growing energy demands. The intention is to build solar parks as well as develop Nuclear power plants, usually in the rural expanses. As cities grow, they need land to build landfills and water-treatment plants among several other kinds of amenities. In both situations land is being acquired in poorer peri-urban regions and land that is classified as "wasteland" in rural areas. Most of this acquisition is done by the government- even when it is being carried out for private interests, the negotiations are often led by the government bodies. A lot of this "wasted" land in question serves lower caste and lower-class population groups, nomadic and indigenous communities.

While in the rural areas, such an acquisition leads to direct displacement and a necessity to migrate to earn livelihoods, in urban areas, it leads to a notable decline in the quality of life due to an impact on the quality of water and air. Children continue to attend educational facilities available in the region. The primary and secondary educational facilities or the temporary non-formal educational structures follow the state defined curricula. India has a notable legacy in the domain of environmental education, something that was mandated by the Supreme Court of the country in 1991, coincidentally just a year before the country opened its door to the world through the policy of economic liberalization. The conflict between the desire to conserve nature and sustainable indigenous practices and the need for economic growth has persisted- as pointed out the burden often falls on the poor and marginalized. India is following the global initiatives to integrate the Environmental and Sustainability Education initiatives into its curricula but how successful is it in acknowledging and reflecting on the struggles of its own people?

For example, the competency-based approach of Education for Sustainable Development talks about the need to instill and bring out capacities of critical-thinking and anticipatory thinking but how realistic is it when basic provisions that a welfare state must provide for go missing? Could approaches based in theatre and movement help bring out some of the trauma that such populations groups are experiencing? Could it become a way to channelize the frustrations and offer the necessary healing before one talks about the possible route of action for the future? What indigenous knowledge and practices could be relied on to bring out their authentic experiences and build a

path for both- resistance and growth? A certain decolonization from the western articulations of Sustainable Growth and an awareness of class-caste struggles located in the lived realities of global south is necessary for a fair and equitable growth and creation of opportunities through educational processes and systems. Through our work in the formal as well as non-formal educational system in the peri-urban areas of Delhi and Rural Rajasthan, we would like to share and co-create further, based on our lessons on the subject.

"I am not Eligible": Climate Anxiety Student Coping within University Boarders

Oleksandra Khalaim

In 2021, the first massive survey investigated attitudes of young people from both Global North and Global South to future under climate change threats (Hickman et al., 2021). It is indeed not surprising that two-thirds of them regard their future as "*frightening*", under the climate urgency we face. The consequences have been constantly intensifying, and it has finally been proven that humans are responsible for a huge list of environmental damages on the Earth resulted by anthropogenic climate change (IPCC 2021).

What is the role of universities acting for sustainability transformations (Verhoef & Bossert, 2019) through ESE, in climate anxiety coping of their students? Are higher educational institutions and specifically student health services working towards the transformation of climate/eco anxiety attitude from "*a chronic fear of environmental doom*" (according to its classical definition stated in Clayton et al. 2017) to an empowering complex of emotions that help to form an adaptive response to climate threats (Comtesse et al. 2021)?

The recent research in Sweden (Rothe, 2021) claims that universities do not meet climate anxiety of student youth properly, leaving it beyond own responsibility. Students often do not feel eligible to address student health services with climate related anxiety cases. Moreover, our own recent observations show that student health services of top ten most populated universities in Sweden do not mention climate/eco anxiety in their website publications (Khalaim & MacQueen, 2022). Hospital Anxiety and Depression Scale (HAD) test that help students identifying depression and anxiety states in their life routine appeared to be recommended by half of them to students, but its efficiency in identifying climate/eco anxiety states remains doubtful. Another communality for analyzed student health service webpages was the prioritizing study-related cases rather than working with students' stress or anxiety in general. The question here is if students and student health services can distinguish study related anxiety out of climate change related one, as well as general one, especially if either studies or private life (in case of ecological civil activism, for instance) is related to climate change topic?

Even though the problem of climate anxiety remains novel and is only entering general health care practices (Pihkala 2021), more information should be available for students in university health services to "legitimize" climate/eco anxiety related inquires. The problem of climate anxiety that exists de-facto within university walls should be recognized de-jure as well. New interdisciplinary groups should be created, protocols and educational practices of students' emotional support should be developed, as well as peer support system involving ecopsychological expertise should be organized in higher educational institutions, together with continuing education for teachers on coping techniques in relation to ecological emotions (Pihkala 2020). But first and foremost, university administration should publicly accept the mission of taking eco / climate anxiety problem out of a "shadow zone".

Moreover, emotional work within climate change education can be regarded as a part of the "inner sustainability" concept that is based on "*encouraging scholars and practitioners to intentionally cultivate their inner worlds to strengthen inner resources necessary for addressing sustainability challenges*" (Ives, Freeth & Fischer 2020). Some universities in Sweden have already started integrating it into their program documents: for example, Karolinska Institutet provides an extra focus on inner sustainability as a part of its Strategy 2030, in order to "*highlight the*

potential of inner worlds when it comes to inspiration, mental-, emotional- and spiritual health, insights, focus and problem-solving" (KI official website, 2022).

Given the wider perspective and importance of climate related mental health, researchers emphasize a necessity of further evidence base development to determine social and infrastructural resources in order to train the next generation of "Climate Mental Health Specialists" (Susteren & Al-Delaimy, 2020). Climate change education should go hand-by-hand with psychotherapy aimed effective work with emotions related to environmental topics in a university classroom. Most likely, global climate change will remain with us in the upcoming years; it means a high need of new datasets and further studies on "ecopsychiatry" (Cianconi, Betrò, and Janiri 2020) in higher education, to support the academic community in these uncertain and vulnerable times.

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Care in Times of Climate Crisis

Charlotte Ponzelar

> "I often talk to people who say, 'No, we have to be hopeful and to inspire each other, and we can't tell [people] too many negative things' . . . But, no — we have to tell it like it is. Because if there are no positive things to tell, then what should we do, should we spread false hope? We can't do that, we have to tell the truth."
>
> Greta Thunberg

What if the truth hurts?

What if our initial concern, the driver behind educating ourselves about the climate crisis simply develops into anxiety leaving us paralyzed, hopeless and in despair? We have all the facts. We have all the knowledge. We understand what is at stake. We want to run, and still, we are exhausted before we are able to move.

As the title of this year's seminar, climate activists around the world, climate scientists and any type of media coverage about environmental hazards suggest: 'we don't have time' and 'our house is on fire'. We are not talking about a problem for which there is a solution. We are talking about a crisis that leaves most people learning about its severity in shock with emotional, cognitive or even physical and behavioral reactions that can be associated with symptoms of trauma (Clayton & Karazsia 2020).

Issues regarding the emotional dimensions of ESE and questions of 'who takes responsibility for our trauma' and if this question would be fruitful to ask have continuously accompanied me after my studies in Environmental Communication (M.Sc.) and during my work as a course coordinator (CC) at CEMUS[6]. At CEMUS students are hired as CCs to develop and facilitate freestanding university courses following an educational model of student-led education. It encourages CC-students to break free from traditional teacher-student hierarchies and to take charge of their own and 'their' students learning trajectories. Myself, together with my colleagues and students were empowered and supported to challenge conventional ideas about teaching and learning, which led to me asking today:

What if it is not the knowledge that leaves us hopeless but the way we are left with it that makes us feel helpless?

By now, researchers, teachers, course coordinators and students might be aware of emotional responses to existential questions (e.g. Wu et. al 2020) but are barely equipped with resources nor knowledge to respond to it. While educational institutions should keep an eye on the students' readiness to learn which is influenced by their well-being (Keeling 2014), a common response to this issue is that teachers cannot take the role of therapists. Other authors criticize an infantilization of students when assuming the need for emotional support since they should be treated as mature adults that can take care of themselves (Barnett 2010). I wish for us to realize that not only students but also researchers and teachers are in this crisis together and that it demands for learning communities in which we do not feel alone with the struggle - no matter our age or position. We might question our being in the

[6] CEMUS is the joint Centre for Environment and Development Studies between Uppsala University and Swedish University of Agricultural Sciences in Uppsala, Sweden.

world, our identities and relationships, and even question the questions we are asking. As much as we care for this world, we must learn taking care of ourselves while taking care of others.

Barnett (2010) argues for a therapeutic university in times of uncertainty and calls it a feasible utopia which I suggest we should scrutinize further in ESE research and beyond. My learning and teaching experiences (see Ishihara et al. 2021), and reflections on readings about relational understandings of sustainability (e.g. Walsh et al. 2020, Facer 2016, Care et al. 2021, Barad 2007, Haraway 2004, Wamsler et al. 2018, Hooks 2003, Macy & Johnstone 2012) make me believe that we can create learning environments where there is space for climate sorrow (Todd 2020), where the learning community can hold insecurities through strong relationships (Bergdahl & Langmann 2021) and without threatening the pedagogical role of educational institutions.

Together with my colleagues and the ESE network, I wish to explore these relationships and how learning environments can foster community with the notion of care as potentially fundamental in the everyday. This interest touches upon various sub-themes of this year's invitational conference, but mostly engages with the quest of acknowledging and responding to '*emotionally challenging and existential issues in teaching and learning practices'.*

The following questions illustrate different layers, tensions and levels of how an inquiry into the matter can unfold:

- *What does it mean to explore relationships that come to the surface in education and research practice: the relationships towards ourselves, each other, and the world around us?*
- *What is the role of the student and the pedagogical responsibility of the teacher in creating a learning community that nurtures care, in which we can openly share vulnerabilities?*
- *How can the university (incl. academia) establish time and space, hence, structurally allow to be agile in situations that demand for listening, slowness and care?*
- *Where are boundaries between the psychological and pedagogical role of educational institutions and its actors? But more importantly perhaps, where does the ESE research community stand in response to this question?*
- *How can we methodologically and emotionally marry the urgency to act with wise deliberate slowness? In relation: How can we focus on solutions while also grieving what is lost?*
- *And as a way to approach these questions: What is there to be unlearned?*

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Fostering Deep Learning by Uncovering Emotions in Empowerment for Sustainability Processes

Valentina Tassone

Empowering students to care for a world in crisis is more than a noble proposition. It is an urgent matter of focus in sustainability-oriented higher education (UNESCO, 2015). Increasingly, it is acknowledged that climate challenges and the search for a more sustainable world can be emotionally charged (e.g. Pikahla, 2021; Martiskainen and Sovacool, 2021), that therefore emotions are important to consider in education (Verlie, 2019), and that they are connected to students experiences of (dis)empowerment (e.g. Jones, 2021). However, the literature falls short on exploring how to facilitate processes of empowerment for sustainability that include the emotional dimension. This essay focuses on addressing this point by presenting and reflecting upon the use of the expanded EYE model for facilitating emotion-inclusive deep learning processes of empowerment for sustainability.

Tassone et al, (2017) and Tassone and Wals (2014) have elaborated the EYE (Educating yourself in Empowerment) 4 Sustainability model, which supports processes of empowerment. This EYE model draws from notions of psychological empowerment (e.g. Zimmerman, 1995) and transformative learning (Mezirow and Taylor, 2009). The EYE, see Figure 1, is represented by green eye-glasses and is *four dimensional*. Implementing the EYE in teaching practices implies engaging students in: reflecting on sustainability-related worldviews, facts, and practices (*understanding dimension*); connecting to sustainability challenges that matter to them and exploring their aspirations, dilemmas and personal agency (*awakening dimension*); positioning themselves and considering structural factors and available resources, in their quest for a more sustainable existence (*positioning dimension*); creating and implementing a real-life personal initiative in order to contribute to a sustainability challenge within their own sphere of influence (*enacting dimension*).

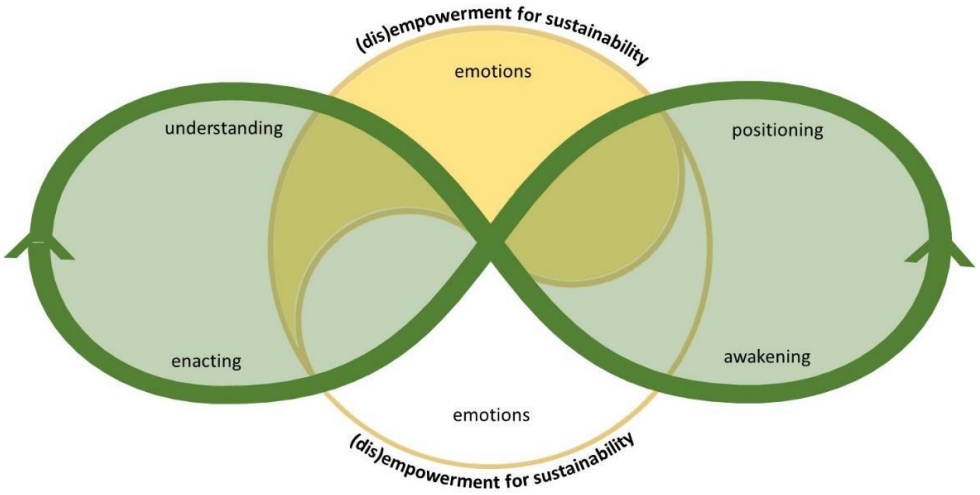

Figure 2: The expanded EYE model (Graphical Design by Floor de Wit)

This essay presents an expansion of the EYE model. This expanded model includes a fifth dimension, the *emotions,* as an integral part of empowerment for sustainability processes. The *emotional dimension* is represented by the TAO symbol (the yellow circle) in Figure 1. This expanded EYE model can be employed when designing whole-courses and is integrated in the teaching practices in various courses at Wageningen University & Research (WUR).

There are *three questions* I would like to engage the reader with, and which are only partly explored in the literature addressing empowerment, emotions and sustainability. For each question, I share *reflections* based on my observations during the six credit WUR course "Empowerment for Sustainability" which I have designed according to the expanded EYE model and which I teach, in collaboration with invited co-teachers.

1. *What teaching and learning approaches can help students to explore their experienced emotions in empowerment processes?* This question is hardly explored in literature. My observations suggest that creative approaches such as arts-based, reflective and contemplative teaching and learning approaches (e.g. Pearson et al., 2018) are conducive to uncovering the *emotional dimension* in deep empowerment for sustainability processes. Storytelling, photography, dialogue conversations, theater, and contemplation in nature, are all examples of teaching approaches that were implemented in the course presented above, and helped students to connect to their emotions and brought depth to the learning process. The evoked emotions also drive the development of arts-based students initiatives (*enacting dimension*). Examples of those initiatives can be found here.

2. *To what aspects of the empowerment process are emotions connected?* Emotional experiences, in the context of (dis)empowerment and sustainability, are not only related to students (lack of) agency, engagement and action, and to (climate-related) sustainability concerns. My observations suggests that it is valuable to uncover emotional reactions in connection to each and all of the four dimensions of the EYE. An example, in the *understanding & positioning dimensions*: during class, students are invited to give a first emotional reaction while looking at the image of a word-cloud mapping multiple ways to interpret sustainability. Linda said she felt confused, lost and disempowered by those different interpretations of sustainability, she would have hoped for a more clear-cut definition at least within the course; Mark, however, experienced a sense of curiosity and felt open and empowered to investigate those differences and see where his ideas would fit in. Sharing those emotional reactions can support deep learning and enhance students' awareness about their personal worldviews, values and resistances in their quest for making sense of sustainability.

3. *What emotions belong to the quest for sustainability and (dis)empowerment process?* There is a tendency to consider negative emotional reactions resulting from (climate- related) sustainability concerns as counterproductive, and to look at positive emotions as valuable ones for the empowerment process. My observations suggest that both positive (e.g. hope) and negative (e.g. sadness) emotions can be generative and can be associated with both feelings of empowerment and disempowerment. The TAO, depicted in Figure 1 in a yellow circle divided in two, can help map both positive and negative emotions in connection to a certain topic or experience. An example, in the *awakening dimension*: during class, when reflecting about things that matter to students, Jeanette talked about and expressed love for her village back home

and for the people there. She also expressed grief and her increasing sense of disconnect from this place, due to urbanization that resulted in the loss of green space in the village. The recognition of both those positive and negative emotions empowered her to organize friendly walks with neighbours in the village, to talk about how people experienced those changes in the village and to see whether they collectively wanted to do something about it.

During the seminar the above questions will be used as prompts for conversation, and the above reflections will be further articulated.

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SUB-THEME 3

THE RELATION BETWEEN EDUCATION AND THE PURSUIT OF SOCIETAL TRANSFORMATION

Katrien Van Poeck, Jeppe Læssøe & Maarten Deleye

Over and over again, education is called upon to contribute to solving societal problems. This is also the case in the light of sustainability problems. A strong sense of urgency about the escalating climate crisis – which becomes visible in activist movements such as Fridays for Future – leads to demands for an educational response. Yet, the role of education in the pursuit of societal transformation is the topic of vibrant discussions in educational scholarship. Questions like these pop up:

- How does the escalating sustainability crisis affect the conceptualisation of the purpose of education in ESE research?
- How is ESE research responding to increasing urgency and climate emergencies and do we perhaps need alternative responses?
- How are ESE researchers and practitioners from different areas of the world dealing with specific local escalations and corresponding challenges?
- To what extent is the focus on climate emergency something to welcome? Is there reason for concern about undesirable reductionism that may distract attention from other vital issues for ESE (research)?
- Should ESE research be more disruptive or activist in times of global systemic sustainability crises and, if so, what does this imply for the content and practice of research?

The essays written about this sub-theme address the relation between education and the pursuit of societal transformation from different angles and zoom in on a variety of elements such as methodology, theory, practice, societal expectations, educational outcomes, and local contexts. However, a number of recurring topics throughout the essays (change, urgency, future and imaginations, aesthetics, justice) can be found, and these formed the starting points for our discussions on this sub-theme during the Invitational Seminar in Ghent in June 2022. Exploring the sub-theme from the variety of ideas and perspectives present in the essays, we identified and discussed a number of tensions and paradoxes as well as some blind spots in past and current ESE research. Furthermore, we were able to look ahead to formulate some pathways for future research.

In what follows, we describe how the collection of essays addresses recurring topics centred around the key notions of change and time. Subsequently, we outline the tensions, blind spots, and pathways we identified and discussed.

A COLLECTION OF ESSAYS ON THE RELATION BETWEEN EDUCATION AND THE PURSUIT OF SOCIETAL TRANSFORMATION: RECURRING TOPICS AND KEY NOTIONS

Given the sub-theme, it is not surprising that one of the main recurring notions in the essays is *change* (e.g. Carlsson, Perry, Ruitenberg, Van Oers). Authors addressed the need for change, drivers of change, obstacles/impediments for change, change as a focus for observations/studies, etc. The issue of change is at the core of environmental and

sustainability concerns and, for this reason, omnipresent in ESE practice and research as well. In the light of escalating unsustainable developments, the change issue is dramatically accentuated and is, in several essays, addressed as a matter of justice (e.g. Jørgensen & James, Kinjanyui, Zhou). It has given rise to a feeling of dissonance between, on the one hand, our educational approaches and ideals such as avoiding the instrumentalisation of students, teachers, and educational institutions and, on the other hand, the catastrophic detoriations and huge challenges we are facing that elicit reflection and inspire some of us to critically re-think earlier held pedagogical ideals or to search for reasonable responses and theoretical explorations of ways forward.

In the essays as well as throughout the discussions, change took upon different shapes and focal points. In the essays, arguments are raised about how education can be an effective way to change things and make our world more sustainable, clearly in line with the "pursuit of societal transformation" at the heart of the sub-theme. Simultaneously however, it is argued that education itself must change if it wants to be relevant/worthwhile in times of climate crisis. Similarly, also with regard to research the essays contain arguments about how ESE research can contribute to change, as well as about the need to change ESE research. We found this interesting to explore in more depth: Can we make it more precise what it is – already – in ESE (research) as we know it (or at least in some forms/practices of it) that can contribute to change? And what does this mean for the omnipresent, imperative call that ESE (research) must change? All the way, or only some aspects? Do we also, perhaps, need to preserve certain things and protect them from change?

Indeed, attention for change is accompanied by a recurring reference to critique and a critical stance towards what *is*. While some essays also question this, many of them underline critical ESE research, critical reflection, critical thinking etc. As facilitators for the discussions on this sub-theme, we considered this something important to address: Is critical research (and also critical thinking as educational outcome) still a useful concept in times of climate urgency? Where has it brought us so far? What did/can it change? What would the alternative look like?

The second key notion underlying some recurring topics in the collection of essays is *time*. The sense of urgency about pressing and severe sustainability problems results in urgent calls to act now. The notion of *pursuit* in the sub-theme mirrors this: time is restricted and we have to act fast. While this urgency is acknowledged and addressed in many essays – not only those on this sub-theme – we find, simultaneously and sometimes in the same essays and titles (e.g. Jørgensen & James; Todd), references to slowness. The need to and value of slowing down is addressed as well as the potential of education and research to do so. Another time-related topic addressed in the collection is the future and imaginations of it (e.g. Rathje; Wessels et al.). Climate changes and other sustainability crises have strengthened the plea for a stronger future orientation in education. It implies several issues for further reflection and research such as the risks that future visionings become fixed utopias or abstract dreams, are reduced to a focus on technical instrumental innovations, or subject to anthropocentric and ethnocentric tendencies. We found it interesting to explore the potential of education to approach the future in an open-ended, process-oriented, critical, and empowering way. Aesthetic approaches are addressed in some essays in relation to this, but also as bearing potential to slow down time (e.g. Wildermeersch; Todd).

TENSIONS, FRICTIONS, AND PARADOXES

Throughout the discussions at the seminar, we identified and explored several tensions, frictions, and paradoxes. We did not 'solve' them - that would be impossible - but looked for ways to balance them and deal with them.

A first set of tensions is related to the notion of change. We discussed the tension between *research and activism*, activities that each have their own and distinct focus, practices, and merits but may become connected in the face of sustainability crises and give rise to frictions between, for example, the need for some form of distanced exploration and an urge for committed involvement. Another tension is that between *change and continuity*. While appeals are made for change in the pursuit of sustainable development, the very notion of sustainability implies continuity in the sense of 'sustaining', preserving, or conserving something valuable. Continuity assumes some form of stability while change implies disruption. Again, the question of what to change and what to preserve comes in the picture. Furthermore, we explored the tension between *transformation and resistance* as two sides of the same coin. Change towards sustainability requires us to be both transformative in relation to our usual ways of thinking and acting and resistant to prevailing, non-sustainable systems. We also addressed the tension between *preconceived and open-ended change*. Is teaching in function of a preconceived understanding of change perhaps rather a form of reproduction? And is that a problem? Finally, we discussed the tension between *critical versus utopian perspectives on change*, involving either being against something or being for something.

In relation to the notion of time, we identified and discussed the tension between *progressive, linear time and immersive, lived time* - or Chronos versus Kairos. The former is very structured and delineates past, present, and future whereas in the latter we live with past, present, and future simultaneously. Furthemore, we discussed the tension between *human and more-than-human time* such as cosmic, planetary time.

Our focus on tensions raises important questions about how to deal with tensions in ESE pedagogy and ESE research. Tensions challenge simple causal logic and open-up for dynamic, multi-factoral, open-ended ways of understanding and dealing with change. To deal with ambivalences, dilemmas, and socio-cultural conflicts seems still more important in an increasingly fast changing and complex world. How do we address this in ESE-research? How is it addressed in existing ESE-approaches? Does it open-up for new ways of thinking and doing ESE?

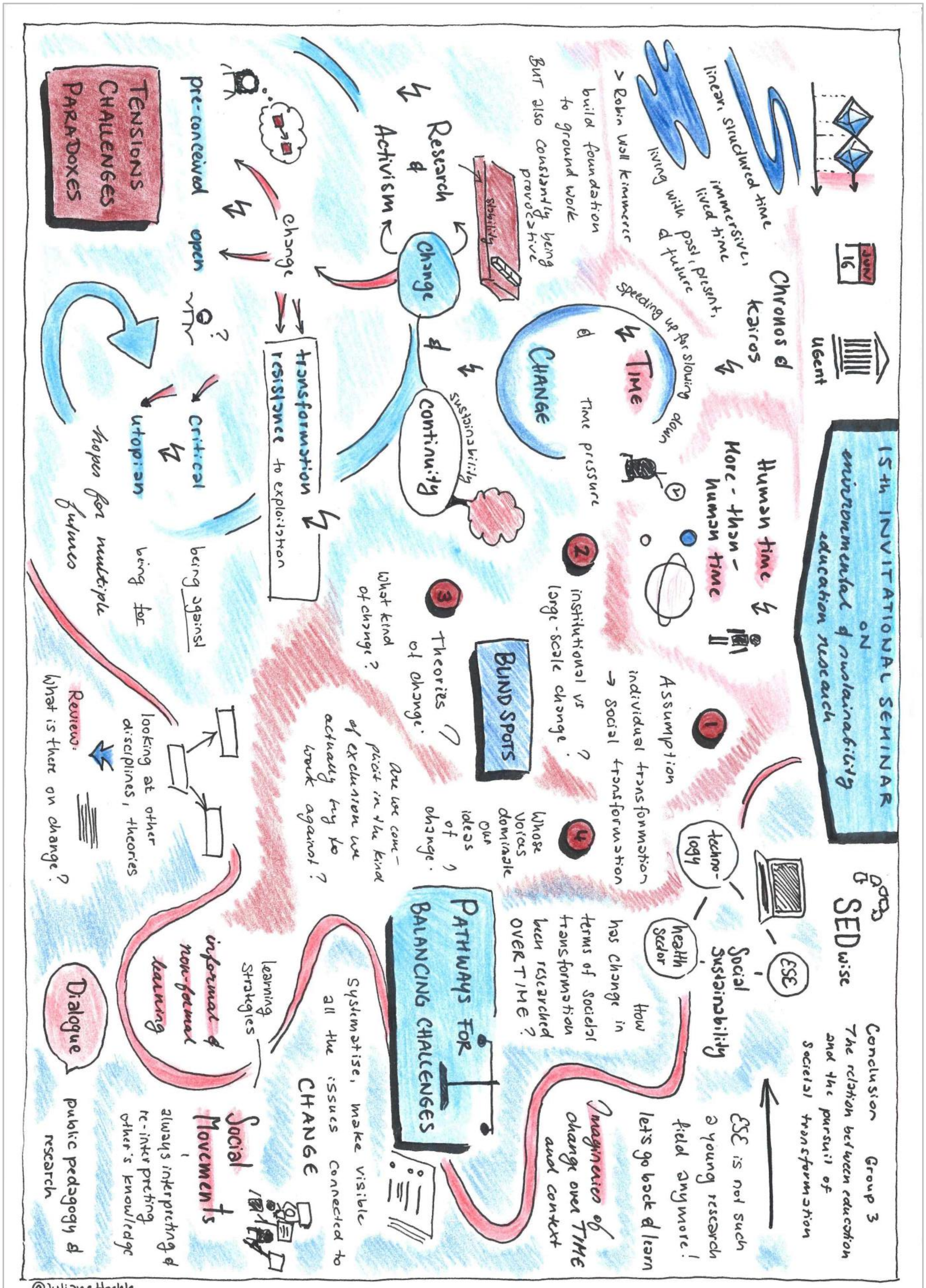
BLIND SPOTS IN EXISTING ESE RESEARCH

Exploring all the above mentioned topics and paradoxes, we identified four important blind spots in existing - previous and current - ESE research that bring about challenges for progressing future ESE research on the relation between education and the pursuit of societal transformation. The first one concerns the *assumption that individual transformation somehow leads to social transformation*. This omnipresent assumption in ESE research is not always well articulated or theorised. Secondly, and relatedly, *theories of change need to be made more explicit*. All too often, these are left implicit, or are just absent. Thirdly, we need to make *sharper distinctions between internal changes in educational institutions and larger social transformations* at a governmental and planetary level. The connection between both is not sufficiently conceptualised. Finally, we identified and problematised blind spots as to *whose voices dominate our ideas of change and whose stories are told - or not*. Also this is often not made explicit, which raises questions about whether we as ESE researchers may be complicit in these forms of exclusion that we actually work against.

LOOKING AHEAD: PATHWAYS FOR FUTURE ESE RESEARCH

We conclude this chapter with some suggested pathways for future ESE research. We briefly - probably too briefly - formulate our suggestions in the form of recommendations. However, we want to emphasise that they are intended as an open invitation for the reader to reflect upon them, discuss them, and engage in further collegial dialogue on how they may help to move our research forward.

- *Learning from the history of our field of research*, from how education in relation to societal change has been researched over time and from recognising what has been overlooked.
- *Being more systematic* in making visible the above elaborated issues and in addressing the blind spots.
- *Being more precise* in articulating for example what is changing, what ought to change, how change is made, etc.
- *More thoroughly conceptualising major topics and tensions* related to education and the pursuit of societal transformation.
- *Mapping, applying, and evaluating promising theoretical and analytical frameworks for* progressing our understanding of education in relation to societal transformation.
- *Including overlooked voices and practices, both in the theories and methodologies we use, in our research settings, and in the practices we study.*
- *Continuing collegial scholarly dialogue* on the topic and creating settings and preserving time and space to do.


15th INVITATIONAL SEMINAR ON environmental & sustainability education research
SEDwise
Conclusion Group 3
The relation between education and the pursuit of societal transformation
ESE is not such a young research field anymore!
let's go back & learn
Imagination of change over TIME and context
Social Movements
always interpreting & re-interpreting other's knowledge
public pedagogy & research
ESE
Social Sustainability
techno-logy
health sector
How has change in terms of societal transformation been researched OVER TIME?
PATHWAYS FOR BALANCING CHALLENGES
Systematise, make visible all the issues connected to CHANGE
learning strategies
informal & non-formal learning
Dialogue
Assumption
individual transformation → social transformation
Whose voices dominate our ideas of change?
BLIND SPOTS
institutional vs large-scale change?
Theories of change?
What kind of change?
Are we complicit in the kind of exclusion we actually try to work against?
looking at other disciplines, theories
Review: What is there on change?
Human time & More-than-human time
Urgent
JUN 16
Chronos & Kairos
linear, structured time
immersive, lived time
living with past, present & future
> Robin Wall Kimmerer
build foundation to ground work
BUT also constantly being provocative
stability
Speeding up or slowing down
TIME & CHANGE
time pressure
sustainability
Change & Continuity
Research & Activism
change
transformation
resistance to exploitation
being against
being for
pre-conceived
open
critical
utopian
hopes for multiple futures
TENSIONS CHALLENGES PARADOXES
@JulianeHoehle

Ecoportraiture: Researching When the Natural Community Matters

Sean Blenkinsop, Mark Fettes & Laura Piersol

The Art and Science of Portraiture was published in 1997 by Lawrence-Lightfoot and Hoffman. They describe its subject as "a method of qualitative research that blurs the boundaries of aesthetics and empiricism in an effort to capture the complexity, dynamics, and subtlety of human experience and organizational life" (1997, p. xv). Lawrence-Lightfoot began exploring portraiture in reaction to not only the traditional objectifying gaze of Western social science, but also against "the general tendency of social scientists to focus their investigations on pathology and disease rather than on health and resilience" (1997, p. 8). To accomplish this, she saw the need to focus on the particulars of individual voices and narratives, but always *in context*. Given Lawrence-Lightfoot's childhood, background, and inspirations[7] it is unsurprising that portraiture leaned in this direction and is at home in the ethnicized, racialized, gendered borderlands where resistance and resilience flourishes. One cannot fully make sense of portraiture without acknowledging its connections with a long emancipatory tradition in African-American culture, or with its fundamental orientation towards social justice and a compassionate feminist axiology. And these commitments to context, to voice (Chapman, 2005), to justice, and to hearing from the often silenced were part of what drew us to portraiture.

To this Davis added a deep interest in the processes of art-making and portraiture as a kind of *thinking*. "In portraiture, as in any work of art, the medium is an agent of discovery" (1997, p. 36). Implicit in Davis's approach is the way that shared practices take on "a life of their own" — that is, both the artistic practice itself, and the objects it creates, become actors in the development of shared understandings among the participants. For us this diverse agentialism and expansion of those considered participants felt like something we could build on (Abram, 2012). For Davis, portraiture could function as a methodology of collective interpretation and representation that avoids singularity of voice and gaze. A close reading of portraiture shows that this *knowing gaze* operates in all directions. The portraitist sees, but is also seen, and the way she is seen in the context of her relationship with the actors carries with it an ethical demand. We found these core principles of portraiture hospitable to the kind of radical inclusion and reflexivity we were seeking and heard resonance into a lot of environmental theory and practice (Malone, 2016). They reflect an underlying ethical stance of *openness* to the complex intertwining of subjectivity, agency and interdependence inherent in ecological relationships, and to the shadows and faultlines that inevitably form part of the whole. Implicit in portraiture is a research ethics that seems well adapted to a time of ecological crisis and to the inclusion of the more-than-human world.

THEORY: PORTRAITURE BECOMES ECO-PORTRAITURE THROUGH PHENOMENOLOGY AND HERMENEUTICS

[7] See: special issue on portraiture of *Qualitative Inquiry* in 2005, where Lawrence-Lightfoot singled out the work of the iconic African-American intellectual W.E.B. Du Bois as her greatest source of inspiration: "He invented a way of being, a point of view, a style of work that quite naturally, dynamically, and organically integrated science, art, history, and activism" (2005, p. 10). Other contributors to the same issue emphasized the congruence of portraiture and critical race theory (Chapman, 2005) and the affinities between portraiture and jazz (Dixson, 2005), while still others offered portraits of African-American, Arab-American and White American educators illustrating "the ways in which race continues to matter in both positive and not-so-positive ways" (Dixson, Chapman and Hill, 2005, p. 22).

A phenomenological bent manifests itself in portraiture in a number of ways, perhaps most clearly in its emphasis on attending to the subject; "I wanted the subjects to feel *seen* as I have felt seen—fully attended to, recognized, appreciated, respected, scrutinized" (Lawrence-Lightfoot & Davis, 1997, pp. 4-5). As in phenomenology, the researcher understands this to be done through the observer's subjectivity; the task is not to set this subjectivity aside, but to embrace what it can tell us. For eco-portraiture this allows the researcher to open themselves up to multi-species dialogues and move through a multiplicity of situatednesses including hearing from and being seen by more-than-humans. The potential gap between perspectives points to how meaning in portraiture emerges *intersubjectively* (Chelstrom, 2013): not simply in relation to another person (say, the subject of an interview), but in relation to a complex context in which both portraitist and portraitee are embedded, but differently situated. It is this reliance of understanding on our embeddeness in the life-world, a relationality-in-context that is *always already* in existence prior to any encounter with the Other, that opens space for the inclusion of the eco while also pointing in the direction of hermeneutics, or perhaps, eco-hermeneutics (Jardine, 2015; Derby, 2015).

The hermeneutic nature of portraiture is apparent in the emphasis placed on context, "voice as the research instrument", relationship, and on the emergence of meaning from "a dynamic process of receptivity, negotiation and accommodation" (Lawrence-Lightfoot & Davis, 1997, p. 186). Even the emphasis on aesthetics finds deep resonance in hermeneutic theory, especially in the writings of Hans-Georg Gadamer (e.g. 1986; 2004) and in ESE research (Gough, 2013; Stevenson *et al*, 2013). The ability of a work of art to strike us, Gadamer says, is a measure of its truthfulness — its ability to disclose something about the world of which we are part while also shaping it. Thus, the labour of the portraitist to "construct a portrait—an aesthetic whole—that resounds with authenticity" (1997, p. 247) is a search for hermeneutic truth of this kind. It is also an opening into diverse encounters with beings that aren't human (Bringhurst, 2008).

PRACTICE

To date, we have worked with the ideas of eco-portraiture developed above for several years now and, although still nascent, we have found the results to be intriguing. To position research as a shared community endeavour and to seek to include all of the relations, kinships (Kimmerer, 2013; Haraway, 2016) of that community as co-researchers has been a challenge. But it has opened up the possibility of asking different kinds of questions in varying languages and voices. It has also forced the human researcher to constantly reflect upon the limitations of much of academic research and wonder if there are times when our research is not still part of the crises we are seeking to overcome. And that we think, is really worth thinking and talking more about.

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Transformative Expectations in ESE Research

Monica Carlsson

This essay is addressing the sub theme on the relation between education and pursuit of social transformation. Drawing on terms such as 'rethinking', 'revitalizing', 'disrupting' and 'reframing' education, ESE research responds to the calls in global policy for education to play a crucial part in addressing sustainability challenges in what are potentially major changes to existing social systems and practices. Below I'm discussing ontological, epistemological and methodological stances in journal articles presenting ESE research within higher education, pointing out how these are addressing transformative expectations and justifies the knowledge it produces and its methods (Carlsson 2021). Here I'm drawing on the idea of using demarcations of boundaries to explore justifications of research, and Akkerman and Bakker's (2011) definition of boundaries as sociocultural differences leading to discontinuities in action and interaction. With a reference to Wenger and Engestrøm, they view these differences as a resource for learning, rather than seeing it as something that should be overcome or avoided.

The articles seem to share what one could call an ontological assumption characteristic of critical education research concerning the potential of education to transform and change subjectivities or the cultural or structural formations that hold unsustainable practices in place. This includes: Notions of "seeing things differently" as emancipatory practice (referring to Bateson's concept of epistemic learning), relating it to the potential of education to transform subjectivities. Notions stressing the need to address power dynamics and cultural struggles of domination in processes aimed at facilitating emancipatory change, and to pay attention to both cultural and structural formations in explorations of change agency. And notions of transformative processes as learning about what is "not yet there" with a foundation in a critical realist ontological stance, where phenomena can be perceived as real even though they may not (yet) be actualized or visible.

Justifications for knowledge development include arguments with a foundation in systems theory, where potentials and barriers for transformative learning are seen as dependent on the development of the synergic relations between different sustainability subsystems and levels of action and change. Other examples, drawing on demarcations of boundaries to justify knowledge development, is the use of the binary concepts of individual/collective action, and arguments where a focus on the individual-collective relation in transformative change agency is construed as essential for knowledge development. The need to address gaps in and challenge established transformative learning theories are underlined across articles. Examples are rejections of the validity of rational understandings of transformative learning in favour of more holistic understandings, and critiques of transformative learning's tendency to focus on disrupting cognition/critical thinking, norms and practices, ignoring the need to also disrupt unsustainable patterns of emotional regulation, and ignoring the agenda of social change and action.

Justifications of research methods in the articles are rooted in norms and practices referring to particular critical research traditions, while often also drawing on norms and practices from other critical research traditions. For example, underlining the potentials in action-research-oriented approaches creating knowledge in collaboration with research participants, while highlighting ethical tensions, which can lead to a disruption of norms and cultural practices in sustainability transition practices. This is drawing on notions rooted in post-structural research, and can

be interpreted as cautioning against regarding contradictions and differences as unproblematic in attempts to challenge unsustainable hegemony. Different conceptualizations of transformative expectations in relation to social change, twinned with different understandings of how critical research can facilitate emancipatory change, seem to offer different foundations for methodological justifications. For example, to work for change within existing social frameworks, involving gradual and ongoing change (adaptation), or to seek improvement by engaging in a radical disruption of existing systems of practices and norms.

There is a strong sense across the examples of research of engaging with the moral imperatives of ESE in response to sustainability challenge. Justifications of knowledge development and methods include arguments for the need to engage with challenges and boundaries in theories on learning, action and social change, and in research methods. As Alvesson and Sandberg (2007) point out these are forms of problematization that can develop the research field through challenging taken-for-granted assumptions. The question is which role ESE research within higher education can play in relation to what are potentially major changes to existing social systems and practices. Culture and context influence assumptions about appropriate forms of learning, action and change. As pointed out in one of the articles that was reviewed, social action is more likely to be seen as necessary in community settings than in the context of formal higher education. On the one hand, higher education institutions seem to conceptualize change in relation to sustainability in gradual and ongoing terms. That is, to rely on an adaptive approach, although sensitive to transnational and national education policy agendas, and demands for adaption to economic and technological acceleration processes. On the other hand, the changes in higher education institutions can be described as a series of radical disruptions of existing systems of practices and norms. For example in relation to the democratic backsliding that has been taking place following the 'mobication' agenda in policy, where the role of education is seen as promoting mobility within and between labour markets. And in relation to the emergence of a preference for 'big data' in research funding and the knowledge and understandings of research quality it gives rise to (hereunder the proliferation of different indicators, metrics and measures that serve the purpose of enabling control over heterogeneous institutions)[8]

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Using Social Realist Analysis of Social Learning Value Creation in Organisations Responding to Climate Crisis in South Africa

Michelle Hiestermann

South Africa is facing overwhelming crises of educational quality, record rates of unemployment (especially amongst youth) and environmental issues and risks including water security, further exacerbated by the Covid-19 pandemic. Environmental and sustainability education research that addresses these challenges is critical to ensuring that future generations thrive in a warming climate. The world needs environmental leaders; we therefore need to understand and explore the possibilities of mentoring young professionals in environmental organisations. Several initiatives have been developed to contribute to the mentoring of young professionals in South African environmental organisations. My recent PhD research drew on a critical realist ontology, social realist meta-theory and domain specific theory on mentoring and evaluation to explore mentoring as a value creating proposition in two environmental organisations in South Africa that were part of a national youth employment creation programme which had a strong focus on mentoring. To strengthen conceptual analytical tools on mentoring, I undertook an immanent critique of domain specific mentoring theory to develop a more appropriate foundation for mentoring theory in the environmental sector that was not subject to the historical influence of human capital theory only (which has tended to dominate the field's literature). I then developed in-depth understanding of mentoring in two case study contexts, namely a non-profit environmental organisation and an environmental consulting company, using qualitative research approaches that included contextual profiling, case study research and mirror data workshops. Analytically, I considered the case data drawing on the value creation evaluation framework of Wenger-Trayner and Wenger-Trayner (2014) which itself was developing as an analytical framework as the study developed. I strengthened the analytical framework with social realist interpretations drawing on Archer (1995). This offered me a way of developing an in-depth understanding of the factors which constrain or enable the value creation possibilities of mentoring, with a view to inform human capacity development initiatives that support mentoring in the environment sector.

It was possible to explain the value creation possibilities of mentoring within two case study environmental organisations through considering mentoring as a social learning process of value creation and this overcame some of the shortfalls identified in other early learning theories as well as theories of mentoring. The research revealed how mentoring can provide a value creation social learning trajectory for unemployed youth. A social realist perspective explained how young professionals expanded their primary agency, through full participation in workplace communities of practice, to find their identity as corporate agents in the workplace with their mentors. In this research, Social Realist ontology, theory and methodology was able to achieve what Human Capital Theory could not and provided an account of the interplay of structure, culture and agency over time, through emergent properties and the separation of structure and agency. Thus, it was possible to avoid conflation and the limitation of theory of the present tense, with a deeper, ontologically robust explanation of mentoring as social learning and social change and a social realist orientation to human capacity development.

South Africa has a history of oppression, inequality and injustice and requires social processes that are reflexive, critical, emancipatory and transformative. Therefore, this research required theory and approaches that could

explain mentoring of unemployed youth, as a common good initiative for a more just and sustainable society. As shown in this study, a Social Realist approach can uncover the underlying generative mechanisms and make the implicit more explicit in research, policy and strategy, offering a robust alternative to the tenets of Human Capital Theory that have driven much mentoring research in South Africa and elsewhere to date.

The value creation evaluation framework of Wenger-Trayner and Wenger-Trayner (2020) and a Social Realist approach has been taken further in my workplace practice and tested and used to reflect and analyse the learning processes creating different types of value through a project to unlock development finance and secure "ecological infrastructure" for water security. The importance of managing ecosystems to enhance downstream water quality, quantity and built infrastructure maintenance is increasingly recognized internationally in response to climate crisis. The Global Environment Facility is funding this 5-year project, with the South African National Biodiversity Institute, the Development Bank of South Africa and the Water Research Commission. This project is focussed on improving the integration of biodiversity and ecosystem services into the water value chain through social learning and knowledge management in various organisations. The project seeks to change the way targeted public and private sector stakeholders and decision-makers engage with, think about and integrate ecological infrastructure into water sector development planning and finance.

The value creation evaluation framework and Social Realist approach is revealing how social learning is creating value within the project and beyond, in many organisations. The framework allows for reflection and continuous learning from successes and failures in often unpredictable environments, thus strengthening the resilience of the community of the project. The experiences of this project- the implementation and integration of social learning, knowledge management and mediation practices will provide valuable insights for those interested in Environmental Sustainability, Work and Learning. This is imperative to us and our communities being somewhat prepared and capable to adapt in such unpredictable and complex times.

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The (Slow) Urgency of Socio-cological Justice in ESE – Listening to Children in Marginalized Positions in ESE Research

Nanna Jordt Jørgensen & Anna James

As a contribution to discussions about how ESE research respond to increasing urgency and climate emergencies, this essay discusses the relation between education and the pursuit of societal transformation with a view to questions of socio-ecological justice. Our research interest centers on young children's participation and voice, on the inequalities which constitute barriers to this participation, and on the potentials of a more fine-tuned pedagogy which listens to children's voices and their relations with the non-human environment in our research practices. This listening is a radical process of unlearning and rethinking 'urgency'.

The essay is based on an ongoing dialogue about how research on sustainability education might respond to the voices of children in marginalized positions[9] across two very different geographical and socio-cultural settings – the Danish welfare state and post-apartheid South Africa (see James & Jørgensen, forthcoming). Here we draw attention to the dangers of assumptions underlying urgency (dualism and instrumentalism) and the voices of young children in research as a practice that resists these dangers.

There is a strong sense of urgency about the escalating climate crisis, an urgency which calls for urgent responses. Yet, for decades, scholarship focusing on the environment-democracy nexus have pointed to the tension between the need for urgent responses and the slowness of democratic and participatory processes (e.g., Pickering et al., 2020; Wals, 2010). Historically, participation and democracy have been key elements of ESE policies and a strong focus of research on ESE since at least the 1990s. For instance, the Scandinavian research traditions have seen ESE as a field for cultivating democratic culture and development, with key concepts being action competence and pluralist approaches (e.g., Mogensen & Schnack 2010; Öhman 2006). In South Africa, Environmental Education emerged around the beginning of the post-apartheid era, attempting to differentiate itself from conservation education by resonating with people's education and liberation struggles of the time (Lotz-Sisitka et.al. 2020; O'Donoghue 1987). Yet, despite democracy being a core value of ESE, as other educational fields, ESE also struggles with processes of exclusion and barriers to participation (e.g., Haluza-DeLay 2014; Jørgensen et al 2020; Pashby & Lund 2020), and in recent years, calls for decolonization of ESE have been amplifying (e.g., Kulundu-Bolus et al. 2020; Lotz-Sistika 2017; O'Donoghue 2018; O'Donoghue et al. 2019).

Hence, the notion of urgency must be taken carefully into educational research processes for there is danger that we re-enact the challenges related to dualism and instrumentalism much critiqued by ESE scholars. Haraway points to the relationship with time that emerges with the notion of urgency, in particular a preoccupation with "making an imagined future safe, of stopping something from happening that looms in the future, of clearing away the present and the past in order to make futures for coming generations" (2016). What blind spots emerge when we

[9] We use the term marginalized with a heighted awareness that the problem is both the centre and the periphery. That simply including the marginalized into the dominant system is not the solution because the dominant system relies to a degree on the exclusion of many (Andreotti, 2006). But, thinking with processes of marginalization such as gender, age, race, class (among others) for example in the case of children's voices or the global South is where our reflective capacities will serve us best.

are focused on a 'safe future' and how does it inhibit us from making the 'present' more safe for those (human and more than human) who are currently unsafe? A sense of urgency may support the perceived need to "learn about the world so we can act upon it" (Common worlds research collective 2020) which rests on the assumption that we are separate from nature and translates to wrongly conceiving the thing we are trying to work to change (Darder 2010; Bhaskar 2016; Common worlds collective 2020; Nxumalo et al. 2018). Furthermore, embedded in the binary thinking of "learning about the world so we can act upon it", is instrumentalism – that we know what needs to be taught and learned, that children are empty vessels to be filled. Drawing on Biesta's conceptualization of democratic education (Biesta 2011), we find resonance with his call to resist the separation of action and learning; we do not produce learners to be better sustainability citizens but rather we create the possibility for them to reflect on the 'fragile conditions' which might enable them to be and act as sustainable citizens. We cannot educate as if we have the answers we do not have. Dualism and instrumentalism create conditions for dominant narratives which portray our reality as 'fixed'. We must make space for figuring it out through processes of action and reflection on the conditions we are living in.

The above danger/pitfalls of urgency underly our concern that processes of 'urgent' transformation might leave out attention to voices which are already difficult to hear, in education as well as in research. While the ESE research field has been a proponent of democracy and participation in education, also in this context, hierarchies and power influence our attention and to what/to whom/how we listen. The voices of children who find themselves in marginalized positions linked to, for instance, geography, race, class, socio-cultural status, language, or age, are often unheard or simply not noticed as pedagogies and policies are drafted. The phrase "difficult to hear" awkwardly draws our attention to the fact that in western modes of education we have long practiced silencing the child's voice and more so the marginalized child's voice. It calls our attention to what needs to be unlearned (see e.g., van Oers, this publication) in that regard towards better listening. Paying attention to children's knowledge and experience is not just a matter of encouraging their intellectual and democratic development or securing their rights to participation. Rather, listening to marginalized or difficult-to-hear voices, including children's voices, is a way of broadening our (adult) knowledge-base on sustainability and incorporate diverse perspectives in ongoing processes of social transformation, hereby hopefully building more resilient and co-created practices in the present.

Based on the above, we wish to invite discussion about research practices and approaches which seek to actively listen to children's difficult-to-hear voices, resisting the pitfalls of urgency. We take inspiration from ongoing research on children in the Anthropocene (e.g. Malone 2016; Rousell & Cutter-Mackenzie-Knowles 2020), from research exploring children's creative expressions and expansive imaginations (e.g. Marshall 2013), as well as from our own research experiences with using theatre and play to understand children's experiential knowledge of water (James 2022), and with exploring the politics of children's everyday embodied, non-verbal engagements with the non-human environment (e.g. Jørgensen 2021). Across these research experiences, we ask if and how the urgently slow processes of listening may contribute to socio-ecological just societal transformations.

Through the process of developing the idea of slow urgency we come to the conclusion that the slowness we are asking for is a shift in quality rather than speed. It is to resist prioritizing the wrong things in the name of "time" and moving faster. So when we begin to consider our educational research and education practices in terms of urgent slowness, we consider the qualities that enable the structures that block listening to crumble and voices to

be amplified. One such quality is working with dilemmas, nuance, and contradiction especially in the temptation for clear individualistic calls to action. It is about bringing the "future" into our learning spaces diagnosing our current situation and creatively responding to it.

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Mainstreaming Education for Sustainable Development to Enhance Graduates' Employability Competencies in Kenya

Nicholas Mwaura Kinyanjui

Education for sustainable development (ESD) in the university immensely contributes to sustainable employability in society. In this regard, it is posited that universities ought to incorporate sustainable development(SD) Employability values and practices in teaching, research, community engagement, institutional management, and operational systems (HESD, 2007). The reason why it is paramount to educate university students on education for sustainable development is that the university prepares, and produces thinkers, decision-makers, and future leaders for various sectors of society (UNESCO, 2006a & IAU 2012). Thus, the graduates should possess skills, motivation, justification, ethical dimension, and social support for implementation. This therefore means that universities are morally obligated to work towards achieving employability and a sustainable world (Meredith, Peter, Christopher, 2007). AASHE (2010) sees universities as test sites and models for sustainable practices and societies through the provision of higher education that is conscious of human impact on our planet and the need to live responsibly to meet the employability needs of today and tomorrow sustainably. In consequence, the university that educates for sustainable development builds capacity for global citizens who make the world of work decisions that consider the long-term future of the economy, ecology, and equity of all communities (UNU, 2009). Only education and learning at all levels and in all social contexts can bring about this critical change (UNESCO, 2007).

Genuine Education for Sustainable Development is that one that acknowledges that students' sustainability competencies are correlated to their employability (Gora et al, 2019); the learning outcomes cultivate the knowledge, skills, and values to transition productively into the world of work in creating sustainable societies (Stables, A. & Scott, W., 2002). Thus education for sustainable development employability skills encompasses the transformation of the learners into individuals with the conviction to live sustainably, bringing the achievement of the ESD 1 and ESD 2 concept. Vare and Scott (2007) distinguish ESD 1 as learning for sustainable development to promote positive behaviours and ESD 2 as learning as Sustainable development to transform the learner to be a critical thinker who makes sound decisions. When the learners are equipped with learning to know (knowledge), learning to do (skills), learning to be, and learning to live together (values and attitudes) then they could be said to have attained the highly sought employability competencies (Delors, 1996).

STATEMENT OF THE PROBLEM

Education for sustainable developments scholars and proponents posit that universities have to integrate into curricular sustainability in research, outreach, teaching, and learning to instil values, behaviour, and lifestyles required for a sustainable future (McKeown, 2002; Rieckmann, 2012; Fadeeva/Mochizuki 2010; Barbara & Thomas, 2009). Kenya is committed to championing ESD to enhance employability through its Higher Education in line with the fourth Sustainable Development Goal (SDG) 4 on Quality Education and 8 on Decent Work for the young people in universities (UNESCO, 2016). The Kenya ESD strategy is guided by three broad strategic objectives namely to: Enhance the role of education and learning for equitable, efficient, and sustainable utilization of the country's resources; Promote quality education through diverse learning and public awareness for improved quality of life and productive livelihoods and; Promote teaching and learning that inculcates appropriate values, behaviours, and

lifestyles for good governance and sustainability (JKUAT, 2010). Despite the proclamation and declarations of commitment, there lacks a body of knowledge on the result of mainstreaming ESD and its contribution to enhancing employability among university graduates in Kenya (NEMA (2012; Thomas 2004). The ESD-Employability geared skills would be directed to confronting the social, economic, and environmental challenges through mainstreaming ESD for employability (UNESCO 2006b; JKUAT, 2010; NEMA 2012).

From the foregoing, SD competencies are meant to equip people to solve real-world sustainability and employability challenges by embracing them as opportunities (Wiek et al, 2011) in an action-oriented critical approach that facilitates competence development which is a departure from the narrow approach of instrumental rote learning (Weinert, 2001; Vare and Scott, 2007) to transformational education viewed as an emancipatory educational approach (Vare and Scott 2007; Wals 2011, 2015). ESD's central objective is to imbue competencies to enable active, reflective, and cooperative participation toward sustainable development (de Haan, 2006).

The importance of the implementation of education for sustainable development to advance the youth employability competencies in universities cannot be overstated. HESD research published in international peer-reviewed journals has evidenced a strong focus on developments in such countries as the USA, the United Kingdom, Australia, Canada, Sweden, Spain, Japan, and Germany (Adomßent, M. etal, 2013). However, there is much to learn about Central and Eastern Europe, and little is even known about HESD in African, Asian, and Latin-American countries. Conducting more research in these so far underrepresented regions will help to better understand the relevance of different contexts as well as general drivers and barriers to implementing HESD and its contribution to employability.

ESD RELEVANT COMPETENCIES TO ENHANCE EMPLOYABILITY

In this research, the Synthesis of ESD competencies by Lozano et al (2017) and aligned with the employability approach proposed are emphasised. As follows:

1. Competencies:
2. Systems Thinking
3. Interdisciplinary work
4. Anticipatory thinking
5. Justice, responsibility, and ethics
6. Critical thinking and analysis
7. Interpersonal relations and collaboration
8. Empathy and change of perspective
9. Communication and use of media
10. Strategic action
11. Personal involvement
12. Assessment and evaluation
13. Tolerance for ambiguity and uncertainty

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ESE Research: Moving Towards Enacting Change

Sophie Perry

THE DIVERSITY (AND DISSATISFACTION) OF EE

As an early career researcher in Environmental Education Research (EER), orientating myself within the terms that describe environmental and sustainability-focussed learning has been dizzying. Over the past 50 years, Environmental Education (EE) has evolved, or splintered, to give rise to Education for Sustainable Development (ESD), Education for Sustainability (EfS), Environment and Sustainability Education (ESE), Climate Change Education (CCE) and Environmental Justice Education (EJE), each with their own distinctions. But what how do these terms relate to each other, and how important are their similarities and differences? According to Jickling and Sterling (2017), and González-Guadiano (2005), the work that has gone into defining and introducing these terms has not been impactful. The new terms introduced to the field demonstrate 'empty signifiers', which simply serve the purpose of creating distance from the imperfections associated with previous terms, instead of effecting change in practice (González- Guadiano, 2005). The resulting multiplicity of terms is thus a 'problematic' within this research, whereby new terms continue to be introduced as a result of misgivings or disagreements over existing terminologies (Jickling & Sterling, 2017).

Empirical studies suggest that the (re)defining of EE and linked educations is limited to the theoretical realms of policy documents and research journals, with limited impact on educational curricula or experiences. Glackin and King (2020) reviewed curricula and examination specifications across England to reveal a lack of meaningful EE. They found that most references to environmental learning were isolated within geography and the sciences and absent from subject areas that could offer alternate framings, such as religious education or the arts. Climate change and environmental degradation as topics were largely apolitical, and restricted to learning *about* the environment, rather than any efforts to learn *for* its protection or longevity. Their study shows that despite literature on what EE *should* be, it is not reflected within formal education in the UK. Gough demonstrates how this could become so, in a study which shows the difficulty in translating terminology into practice despite clear intentions to do so. Gough (2006) explored an Australian national education initiative, developed to employ the priorities of UNESCO's Decade of ESD. Gough found that despite strong distinctions between ESD and EE in UNESCO's published reports, in Victoria, Australia, EE practice continued in nature but became ESD in name (Gough, 2006; UNESCO, 2009). In other words, no practical change in educational planning was brought about by the ideology and guidance that accompanied the new term.

Though dispiriting, I do not see the examples (Glackin & King, 2020; Gough, 2006) or arguments (González-Gaudiano, 2005, 2006; Jickling & Sterling, 2017) as evidence that continuing to build on, critique and adapt within this field is in vain. Rather, I understand that the risk, and evidence, of empty signifiers serves as a call to action to us as researchers and practitioners. It instructs us to better facilitate and manifest the transformation that we hope to see in education, in order that we can realise change in society.

WHAT TRANSFORMATIONS ARE WE WORKING TOWARD?

While our research community may struggle to agree on one name for education that addresses environmental, sustainability and climate concerns, there is widespread agreement that this education is a vital contributor to change (Reid et al., 2021). I suggest that we can look to the literature, not to pinpoint a singular, specific approach but instead suggest several themes that are key to a broad conception of educational practice (Clark et al., 2020). We are urged by Wals (2007) not to be prescriptive; to remain open to the fact that our intended destination – a sustainable and just society – is a completely unknown endpoint, yet together we must create it. As such, seeing research and practice in this field as a learning process itself (Scott & Gough, 2004) can enable us to explore, experiment, critique and construct as educators, learners, and researchers. In such a way, there is not one 'correct' education to address these complex issues, but many (Chang et al., 2020).

Yet, this explorative and open view of what education should be to affect change is at odds with many education systems as we know them. Some argue that the purpose of dominant education systems is to *maintain,* rather than disrupt existing social order, to produce citizens who fit into current ideals of citizenship and structure (Scott & Vare, 2018; Stevenson, 2007). This includes the dominant systems of capitalism and neoliberalism, which prioritise markets and profits despite environmental and social costs (Hickel, 2021; Hursh et al., 2015). We are limited in our ability to transform our social and environmental systems without addressing the role that education currently plays in upholding them. As Thomas (2009) suggests, the strongest sustainability solutions require a reimagination and redesign of our education systems themselves.

SYSTEM CHANGE, NOT CLIMATE CHANGE

I argue that as researchers, we are a part of these damaging systems and so we, and our practice, must change. I understand that our call to action is to use research to encourage, support and implement transformation, rather than document the changes that others (understandably struggle to) make. We can, and should, do more with the questions we ask, the way we ask them, and the positions we hold in academic institutions.

The questions we ask must actively seek out and centre the perspectives that dominant systems continue to marginalise. We must learn from and support communities and scholars who centre justice and Indigenous Knowledges, who consider how race, class, gender and disability intersect with environmental education (Brulle & Pellow, 2006; Lowan, 2012; Maina-Okori et al., 2018; Shava, 2013; Tuck et al., 2014).

We should ask these questions in ways that empower those we work with and prioritise views of those with lived experiences of environmental inequalities. Participatory methodologies, including co-researching with practitioners and young people, can play a role in this (Barratt Hacking et al., 2007; Trajber et al., 2019), but we should also work to further recognise methodologies and knowledges that academia has historically been hostile towards. We must consider how structures of academia and publishing prevent further collaboration and action – how can our work live beyond and outside of peer-reviewed journals, and instead reach diverse co-researchers and communities?

Thirdly, we must use our positions within universities for change. Universities wield much power in educational and political systems, and hold potential to create and sustain change (Filho et al., 2015). So, we must actively push our

universities to explore and adopt alternative strategies. Where I study in the UK, this involves taking action against privatisation in the education sector (Parker, 2019; Shore & Wright, 2019).

To close, I argue simply that since we call for education to become more explorative and active than current systems enable, we must also enact this change through the parts we play in those systems.

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Multiple Futures – Anticipatory Competency and Critical Utopian Horizons in Environmental and Sustainability Education

Nadia Raphael Rathje

In education in general, and education for sustainability specifically, the future is always embedded, as education continually has implicit ideas about which citizens are educated for which future society. Combined with the great need for change and transition that the sustainability challenges require, it may come as a surprise that anticipatory competence is not a major focus in both ESE research and educational practice. Everyone has been taught history, but few have been taught visions of the future, strategic foresight or critically utopian horizons (Bengston, 2016).

In my research on the development of sustainable primary schools in the welfare state of Denmark, I have asked school principals, teachers and students what kind of school they dream about and what the school of the future should look like in their opinion. It turns out that it is difficult to get answers that go beyond the everyday life and the understanding of the school that the participants already have; basically, the answers revolve around more time and more freedom. At the same time, and in contrast to this, these same people are concerned with sustainable development, experience a strong need for development, transformation and transition, and have high hopes for how education can help solve the enormous environmental crises (climate, pollution, biodiversity) and the social and economic challenges we and the planet face.

"The school is the materialisation of the decision of a society to offer a time and space for study, exercise and thinking in order to give the young generation the opportunity to renew society" (Masschelein & Simons, 2015, p. 88). Masschelein and Simons is one of many possible examples of viewing education as a particularly possible utopian place where the seeds for valuable change can be laid for the individual and for society. Again, the contrast between this and the contemporary challenges of creating a school that opens up the work of sustainable development is huge. One of many problem areas is how to become more skilled at imagining the future we want and increasingly need to be able to imagine. This is also connected to a need for new conceptions of the future; the current state of the world calls for a different understanding of time and future than the traditional narratives of modernity which use reason, technology, liberation and progressive thinking think of history and the future as linear. In this way of thinking, it is science that understands and develops the world towards progress, just as it is market forces that create growth and wealth. But the notion of mastery of nature, technological progress and future happiness and growth has had difficult conditions in the wake of environmental disasters.

A question that arises is whether it is becoming increasingly difficult for the people of today to imagine alternative futures? A possible framework for examining anticipatory competence and the people of today's ability to think critically utopian is with Oskar Negt's understanding of the modern human's loss of orientation ability (Negt 2019, Nielsen 1997). The immense complexity makes us dependent on experts, the crises are diffuse and intangible, and we cannot understand the world through our own bodily experience. In consequence, we have to rely on experts' statements in everything from sustainability crises to child-

rearing. The Danish further development of Negt: Critical Utopian Action Research (CUAR) explains that by 'critical utopian horizons' is meant social imagination based on everyday experiences and utopian thinking without reducing the importance of a critical perspective (Egmose et al. 2020, Husted & Tofteng 2014, Nielsen 2016).

Another and more direct pedagogical/didactic education-oriented view of anticipatory imagination can be found in Keri Facer (Facer, 2018), who criticises future imagination in education for either thinking too rationally and without imagination, thereby embedding today's hopes and worries too concretely, or with too nearly-excessive hopes for education to solve all the problems of the future and thereby displace uncertainties. Facer argues that the understanding of future imagination in education must rest on a pedagogy of today, which understands itself as an *ecotone*, i.e., an ecologically fertile intermediate zone between past and future. Facer argues that school should not be a preparation for "known futures", but a space of opportunity and a laboratory for new opportunities and new futures.

In an ESE perspective, the need for qualification of future imagination as a skill or competence is formulated in several places, not least in UNESCO's ten key competencies for sustainable development: *"Anticipatory competence: the abilities to understand and evaluate multiple futures - possible, probable and desirable; to create one's own visions for the future"* (UNESCO 2017, p. 10). Thus, qualifying this is a didactic pedagogical task for the field of ESE.

The problem area of developing anticipatory competence and critical utopian horizons has many significant perspectives for both the research field ESE and for a more practice-oriented didactic, pedagogical approach. One of the areas that particularly concern me in the field of problems is the possible important bridges between research and practice, and whether the area has special opportunities to let theory and practice enter into a dialogue and gain from each other. Here are three perspectives for further discussion of this:

First, it is a well-known problem that critical perspectives on existing issues often leave an impression of too disconnected, vague and overarching solution proposals or ideas. A possible development of concepts and a pedagogy that qualifies perceptions of the future may help to provide a better common foundation for understanding and developing perceptions of the future.

In continuation of this, an understanding of anticipatory competence as an essential part of educational ideas about the individual student's democratic formation can contribute to the problem that it is primarily left to researchers and experts to think about future ideas and critically utopian horizons.

A third important perspective is that focusing on future ideas could help to qualify the field's work with emotions, both in the negative perspective of future anxiety, but also in relation to the notions of education's ability to work with (critical) hope (Ojala, 2016) . On the one hand, it could qualify that hope does not just become an empty signifier, a kind of "toxic positivity" that risks that education conceals the big difficult dilemmas in order to inspire hope and action. On the other hand, perhaps through qualification of the social utopian horizons, hope and more sinister feelings can be developed to a greater extent.

This work could transform the interrelationship between hope and action and future imaginations to create an approach of courage for the future.

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Environmental Education as Hubris Control: Convivialist Transformation and the Rearrangement of Desires

Claudia Ruitenberg

When education is called upon to solve a societal problem, it is often as a policy tool, alongside other tools such as legislation and taxation. Want to keep compostable materials out of landfills? Introduce municipal legislation to mandate the separation of organic waste, and launch an information campaign to educate the public about the importance of reducing methane emissions from landfills, and the benefits of reusing organic waste as garden compost. Education as a policy tool is meant to bring about long-term changes in cultural norms that support the behaviour changes prohibited or incentivized by other tools.

While education understood in this way works, it is a limited way of understanding education. This paper considers education not as a policy tool to encourage isolated behaviour change, but as part of movements to bring about societal transformation. In particular, it considers the role of education in convivialism, a political philosophy introduced by Ivan Illich in his 1973 *Tools for Conviviality* and given a new impetus by two recent convivialist manifestos. Convivialism is not yet a framework common in ESE research, but offers a promising unifying philosophy and discourse.

CONVIVIALITY AND CONVIVIALISM

Illich describes the condition of "conviviality" as a social order in which people can act and interact in freedom through access to the material and non-materials tools with which they can shape their lives: "A convivial society would be the result of social arrangements that guarantee for each member the most ample and free access to the tools of the community and limit this freedom only in favor of another member's equal freedom." These tools include not only simple physical tools (spoons, spades), but also the complex physical tools used for production and distribution (factories, trucks), and all the non-material infrastructure of laws, policies, curricula, etc. which organize and regulate society. Having free and ample access to tools understood in this broad sense would require not only extensive participatory and distributive justice but also an end to the concentration and control of tools in the hands and for the benefit of the few. A convivial society would be far more egalitarian than today's industrial and postindustrial societies, and could not strive for unlimited industrial and economic growth. In Illich's words, "survival in justice is possible only at the cost of those sacrifices implicit in the adoption of a convivial mode of production and the universal renunciation of unlimited progeny, affluence, and power on the part of both individuals and groups."

In 2010, the French economist Marc Humbert organized a conference under the title, "Towards a society of advanced conviviality." Resulting from this conference and further discussions, the *Manifeste convivialiste– Déclaration d'interdépendance* was published in 2013, with an English translation in 2014. The *Convivialist Manifesto* defines convivialism as "a mode of living together (con-vivere) that values human relationships and cooperation and enables us to challenge one another without resorting to mutual slaughter and in a way that ensures consideration for others and for nature" (p. 25). It is proposed not as a new idea to replace others, but rather as:

> the term used to describe all those elements in existing systems of belief, secular or religious, that help us identify principles for enabling human beings simultaneously to compete and cooperate with one another, with a shared concern to safeguard the world and in the full knowledge that we form part of that world and that its natural resources are finite. (p. 30)

All convivialist initiatives would have to respect the principles of common humanity, common sociality, individuation, and managed conflict (pp. 30-31).

While the "*The ecological question*: What may we take from nature and what must we give back?" is one of the four basic questions in the *Convivialist Manifesto* (p. 26), its authors and discourse were felt to be too Eurocentric and abstract to inspire a larger international discussion and uptake of convivialism as a set of responses to concrete threats such as the climate crisis. The *Second Convivialist Manifesto*, which expanded the cultural, linguistic, and geographic reach of the authors involved, worked within the broad understanding of convivialism as provided above, but added a fifth principle, "common naturality," as well as the overarching principle of "hubris control." The principle of common naturality recognizes:

> Humans do not live outside a nature, of which they should become "masters and possessors." Like all living beings, they are part of it and are interdependent with it. They have a responsibility to take care of it. If they do not respect it, it is their ethical and physical survival that is at risk. (2020, p. 7)

The metaprinciple of hubris control recognizes the tendency for human desire to degenerate into hubris, the assumption that all desires can and should be fulfilled. This tendency, which has led to the current climate emergency and other forms of ecological degradation, must be controlled and renounced in the interest of survival itself (p. 9).

COMMON NATURALITY, *HUBRIS* CONTROL, AND EDUCATION

It is these two added principles, the principle of common naturality and the metaprinciple of hubris control, that provide the ground for reconceiving the role of environmental education in the transformation toward convivial societies. Education, here, is a not a policy tool, but a fundamental pillar in the transformation of individual and collective self-understanding and the acceptance of clear limits to individual and collective economic and technological ambitions and desires. Gayatri Spivak's (2004) understanding of education as a "noncoercive rearrangement of desires" is pertinent to education for hubris control as it understands the central role of desire. Spivak posits education as involving not only knowledge and skills, but the reorientation of the very desires whose fulfilment drives the selection of knowledge and skills in education.

Education as hubris control must, itself, be done in a convivial manner. Illich criticized most institutionalized education as the kind of tool that gets in the way of convivialism. The rearrangement of desires, to support the development of conviviality, must be a collective and participatory enterprise. In the spirit of the convivialist manifestos, existing examples of convivial experiments can be joined in in a common discourse. From the Universidad de la Tierra in Oaxaca, Mexico (and similar autonomous learning projects in Chiapas, California and Catalunya) to the City Repair Project in Portland, Oregon, to networks of permaculture teachers and ecovillages around the world, educational experiments that respect the principles of common naturality and hubris control are

taking place. For a convivialist societal transformation, their mutual reinforcement, amplification, and proliferation can form a broader social movement.

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Worlding the World in a Time of Climate Emergency: An Education for 'Landing on Earth'?

Sharon Todd

> Sympoiesis is a word proper to complex, dynamic, responsive, situated, historical systems. It is a word for worlding.
>
> Donna Haraway, "Symbiogenesis, Sympoiesis, and Art Science Activism for Staying with the Trouble"

> Broadly, I mean by worlding and its variations worlded and worldedness the following: one thing is never alone, and all things actively construct and compose it.
>
> Carl Mika, *Indigenous Education and the Metaphysics of Presence*

We live in unprecedented and perilous times. Times where the futurability of many forms of life, including our own species, is put into question. As I was considering what I wanted to submit for this symposium a few months ago, COP26 had just concluded, and I was left wondering what planet many people think they inhabit and for how long. What kind of worlds do we/they live in? As Bruno Latour (2017, 2020) puts it in his work, this is not an effect of simply seeing 'the world' from different vantage points, rather it is that we indeed inhabit different worlds: for some the world is where land, resources, and animals are for human use and subject to human value; for others the world is a place of profound interconnection with other living beings and non-living entities; while for others it is somewhere inbetween. For Latour, and this is echoed in much decolonial writing on the environment, we need to find ways of creating worlds that help us to 'land on Earth' – that is, to take seriously our planetary existence, the profound interrelationships this entails, and living as though this mattered.

The challenge both for educational research and thought is how do we really grapple with the enormity of what this requires, since it asks us to de-invest in ways of thinking that come as second nature to us (in the global north and 'west' at least) and to invest in new forms of educational life. How do we undermine our sense of 'subjecthood' as it is felt and experienced by all of us who find ourselves in these cultural contexts (Machado de Oliveira 2021) while moving toward another kind of 'landing' that demands another kind of lived subjectivity altogether? How do we move away from the culture/nature dualism that is part of the very fabric of our languaging the Earth? These are not simply conceptual or intellectual questions, but ones involving bodies and practices and how these matter to our educational pursuits.

Thus how can our educational practices move beyond modernist/colonial conceptions of the 'more than human' world as that which is ultimately separated from 'us' humans? In such a world humans can only ever have relations ***to*** nature. Thus some environmental education initiatives, while well intentioned in focusing on developing better relations to nature to encourage forms of care and stewardship, do not fully challenge the separation such relations are based on. The real difficulty that arises is not to replace one relation ***to*** the world/nature with another, but to find ways of educating and researching that attend to the sphere of relationality and encounter as themselves constitutive of life. This means to think about education not just in terms of creating more environmental awareness, but to think about how it might 'world' the Earth differently.

I'd like to propose that the idea of subjectivity as an interconnected relation (sympoiesis) not only offers us another ground from which to situate our educational practices, but depicts the very process of this coming into being or 'worlding' (Haraway 2017) as an educational one. That is, through its practices, education is continually involved in staging specifically *educational* encounters with other life forms as well as with inanimate elements of the environment, such as rocks, air, water, as well as iPads, books, maps (Todd, in press). As Maori educational theorist, Carl Mika (2017), puts it 'that things in the world constitute other things is a form of education deserving to be thought in its own right' (6). This is echoed in Cash Ahenakew et al's (2014) claim that education 'happens' within 'a grammar of interdependence' (224), which acknowledges the co-constructed realities of things, including human subjects. For Mika, who draws on their ideas, this also marks an understanding of education as an *exchange* with the world – that is, we are not only formed by it, but also form it. For Mika, 'education' is not separate from these co-emergings, it fundamentally depicts a process of 'worlding' the world, of bringing the world into being as it simultaneously brings us into being with it.

While viewing education as a worlding process opens up, to my mind, a way of thinking of education as an aesthetic, emergent encounter between things, there are a number of questions to explore: How might these encounters be choreographed in ways that are ethically and politically responsive to the project of landing on Earth? How might we account for the pain and discomfort of de-investment in the world as we know it? And finally, how does (or can) 'worlding' the world help us – and especially youth – confront the enormity of the future through the present?

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Unlearning in Grassroots Innovations for Sustainability: Rethinking Payment in Community-Supported Agriculture (CSA)

Laura van Oers

Many scholars contend that societal transformation towards sustainability depends on **grassroots innovations for sustainability**: civil society 'networks of activists and organisations generating bottom-up solutions for sustainable development; solutions that respond to the local situation and the interest and values of the communities involved' (Seyfang and Smith 2007, p.585). Through participation in grassroots innovations, such as community-supported agriculture (CSA), participants learn new skills and knowledge required for more sustainable futures, while being confronted with the limits of their previously acquired learnings (Levkoe 2006; Kerton and Sinclair 2010; Bradbury and Middlemiss 2015). The latter may invoke the *process of unlearning*, with critical reflection, active inquiry and rejection of learned practices and beliefs to welcome novelties.

Recognition of this double process is at the core of my main argument: learning for societal transformation towards sustainability involves processes of learning and unlearning. Yet, the few papers that have argued for unlearning in function of a transformation infrequently conceptualised the term and so far failed to provide empirical substantiation of what unlearning entails. To this end, I proposed to conceptualise the role and relevance of unlearning within the context of grassroots innovations and societal transformation. In doing so, I built on two distinct interpretations of unlearning: i) **strategic unlearning** in management, business and organisation studies (e.g. Fiol and O'Connor 2017; Cegarra-Navarro and Wensley 2019) and ii) **pedagogical unlearning** in decolonial and feminist perspectives on education (e.g. Spivak 1996; Cochran-Smith 2000). Organisational scholars consider unlearning essential for change, for organisations to survive and maintain strategic flexibility in turbulent environments. Organisations are increasingly advised to become 'unlearning organisations' and to be mindful of timely letting go of obsolete routines. Pedagogical perspectives understand unlearning as a process in which an individual confronts ingrained assumptions, and accepts that they may pose an obstacle in recognising alternative ('Other') perspectives. Scholars argue that unlearning old habits and beliefs can be a difficult and painful, yet essential exercise for personal transformation. For example, Gayatri Spivak speaks of the necessity to *unlearn one's learning* and to *unlearn one's privileges as one's loss'* (Spivak 1996) to understand how and why biases, privilege and prejudice – that cut of certain kinds of 'Other' knowledge, arose and became naturalised.

Drawing on both literatures, I contend that processes of unlearning in societal transformation towards sustainability can be of strategic and pedagogical importance. I am interested in how, when and why unlearning happens in grassroots innovations, for example in rethinking payment and membership in community-supported agriculture (CSA). I studied two Dutch CSA farms that recently introduced **solidarity payment schemes** to increase access to food for low-income members and to foster solidarity with farmers to secure fairer income (Forbes and Harmon 2008). Rather than a fixed membership fee, CSA members decide themselves how much they wish to contribute in return for a share in the harvest.

My study generated empirical evidence that shows that, next to building new practices of solidarity and supporting a more engaged membership, solidarity payment enabled critical reflection and close examination of CSA such as:

what is the worth of our farm? Who earns how much? Who has access to local and sustainable food? Encouraging members to reflect on their willingness to pay prompted unlearning and welcomed new perspectives of what it takes to realise inclusive and mutually supporting communities. Via solidarity payment, member were confronted with delicate questions such as: 'What is your own wage, and what do you think a farmer should earn per hour?' Members explained that the questions helped to highlight the inability of the earlier payment schemes in providing farmers with a fair income, but also emphasised their core responsibility in reproducing injustice. Therefore, these questions called for reconsidering not only the payment scheme itself but also their role as members of the CSA.

Drawing from the studied cases, I argue that unlearning has the potential to uproot, and confront long-held beliefs, assumptions and biases that stand in the way of societal transformation towards sustainability. However, one should not expect such unlearning to spontaneously emerge (Macdonald 2002; Klammer 2021). It takes deliberate effort and time to make space for unlearning, and its unfolding is likely to rely on 'unlearning facilitators' – like the farmers in our cases. More research is required to determine what factors inhibit and enable processes of unlearning and the role and qualities of such facilitators.

I conclude with a few remarks on the significance of concentrating on *unlearning,* instead of *learning* in grassroots innovations. First, it became more evident that emotions such as discomfort, frustration and shame were at the heart of change processes, and that these required conscious deliberation. Second, I noticed how certain market biases and privileges (unknowingly) persisted in grassroots innovations – such as passive consumer roles and farmers' internalised oppressions, and were worth exposing through an unlearning perspective. Third, I contend that triggering processes of unlearning by means of 'surprising' or 'atypical' proposals (such as solidarity payment) may effectively draw people to action; including those who up to then were unaware, or who were in denial of prevailing sustainability issues.

Confronted with a multiplicity of entangled social and sustainability crises that urge us to start acting and thinking 'outside the box', I consider unlearning and the careful consideration of its (emotional) process of high importance to research and practice on societal transformations.

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Boundary Crossing as an Antidote to the Climate Crisis of the Imagination?

Koen Wessels, Peter Pelzer & Jesse Hoffman

EDUCATION AND THE CLIMATE CRISIS

As several observers have pointed out, the climate crisis can be seen as a crisis of the imagination. The collective failure to cope with this grand challenge is caused by an incapacity to understand and imagine how biophysical systems work (Ghosh, 2016). As modern human beings, we particularly seem to struggle to see 'the "hidden connections" that maintain the long-term viability of life as a whole' (Wahl, 2016, p. 83). Tim Ingold (2008) suggests that this is due to a tendency 'to turn the pathways along which life is lived into boundaries within which life is contained' (p 1-2). Similarly, Karen Barad (2007) suggests that in the current day and age we are accustomed to performing "agential cuts": the tendency to consider different entities and their agency in isolation and thus obscure from view their relational origin and co-dependency.

In this light, it is striking to observe that the climate crisis is often discussed through abstract models and communicated through distant representations (e.g. pictures of polar bears), rather than through direct engagements with our personal lives and our surroundings (Pelzer and Versteeg, 2019). In education, consequently, climate change is often treated more like a technical than a personal or societal issue. From a relational ontological perspective, in contrast, education could foreground that we are all shaped-by and shapers-of the evolving climate crisis in a here-and-now sense and that educational institutions are fundamentally complicit in wider societal challenges. Notably, since fossil fuels and economic growth are so deeply intertwined with contemporary visions of the good life, it is extremely difficult to think beyond them (e.g. Johnson, 2019; Soper, 2020).

We argue that this predicament calls for a radical reconsideration of the way we teach and learn, and of how we understand the position of educational institutions within society. Can we come up with (re)generative approaches to ESE rooted in relational ontologies? Approaches that do not position the school and the student in an outside position to "the world/crisis out there", but in a direct engagement in which learning is connected to shaping a critical and situated awareness and to fostering sustainable and desirable futures/transformation. Schools and teachers, we propose, need not have the final answers as to what the good 21st-century citizen and society look like, but need to excel in staging a collective inquiry that contributes to public debate and decision-making in society. What, then, does a school that truly lives the ecological questions of our time look like?

MIXING AND FUTURING

To frame these considerations and questions in concrete educational initiatives, we deploy the notion of *boundary crossing* (Akkerman, 2011; Akkerman and Bakker, 2011). Boundaries are conceived as 'sociocultural differences leading to discontinuities in action and interaction' (Akkerman and Bakker, 2011, p. 152). Accordingly, learning is envisioned to take place when *crossing* such boundaries (i.e. when we transgress the separating structures/assumptions that organise our lives). Much of the examples in the work of Akkerman, but also the seminal work of Wenger (1998) emphasise the boundaries between different communities or disciplines. We underline the importance of this type of boundary crossing, since the integrated learning challenge of knowing the system dynamics of climate change, grasping the critical policy levers and understanding the role of climate at a deeper

level can only take place in settings where communities of practice are mixed. Notably, when non-students are invited into educational processes this is typically done for the sake of students' learning, yet we suggest doing so for the sake of reciprocal learning.

Importantly, we also argue that another type of boundary needs crossing: the boundary of what future is possible. We are interested in how education can expand the possibility spaces of post-fossil futures. Education, thus, not only as a conversation among different communities of practice but, to paraphrase Donald Schön: *a conversation with a future situation* (Schön, 1992; cf. Pelzer et al., 2021).

To inspire a generative discussion, we would like to share two experiments that took place within our "mixed classroom" and involved both boundary crossing of possible futures and among different communities of practice[10]:

1. Museum of the Future (2019, 2020, 2021): in order to imagine the future beyond the "tyranny of the now" we staged different museums of the future situated in 2050 or 2100, in which the curators (student collectives) look back at the key transitions that took place in the fields of mobility, circularity and climate adaptation. During the opening of the museum a conversation between students and policy makers was staged (Hoffman et al., 2021).

2. Temporal therapy (2022): we diagnosed that Dutch policy makers are temporally confused: they work on long term issues like the energy transition and the implications of sea level rise, yet their practice is dominated by the short term - meetings, quick responses, a lack of reflection (cf. Caney, 2019; Krznaric, 2020). During a full week, collectives of temporal therapists (MSc students) treated a group of temporally confused patients (policymakers) through different sets of interventions.

TOWARD AN ACADEMY OF HOPE

We experienced that such creative and reciprocal engagements of the future provide deep insight both into possible futures and "the current state of affairs" and, thereby, lead to a real sense of "this is what I/we can do here and now". Over the years to come, we aim to experiment with more diverse mixes of communities of practice and to develop various techniques of futuring that can trigger collaborative engagements with the future. Currently, we are in the process of initiating the *Academy of Hope* to host such experiments, which we envision to be an "ambiguously located place" weaving through the spatial, temporal, and agential boundaries of contemporary society. We believe that such places hold the potential to inspire humanity to embrace the climate crisis with increasing responsibility and wisdom. During the seminar, we hope to contribute to a discussion of a relational turn in ESE and, more specifically, how such notions as mixing and futuring can inspire educational institutions to help society as a whole to live the ecological questions of our time. Furthermore, we hope for a generative discussion leading to inspiration as to what kind of educational experiments (i.e. mixing whom and futuring how?) might be particularly promising/important to pursue.

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Imagining Aesthetic Approaches in Education: Bruno Latour's Challenge to Reinvent the 'World'

Danny Wildemeersch

In his new book 'Où suis-je' (Where am I?) Bruno Latour (2022) formulates a fundamental critique on the modern worldview that was developed at the turn of the 16th to the 17th century and that has pervaded almost all aspects of life on earth and beyond. This worldview, which he calls the view of the 'moderns', initiated by scientist such as Galilei, Copernicus and Newton, was based on the finding that the earth is not at the centre of the universe, but just a planet turning around its own axis and turning around the sun, situated in a wider universe to be further explored. These findings have set in motion a tremendous number of discoveries in the following centuries in the rapidly developing and proliferating modern sciences of the western world, which enabled drastic transformations in how humans relate to the world, its inhabitants and its material conditions.

Today we experience the limits of this modernist worldview, most remarkably through the crisis of climate change and the corona-crisis. Both dramatic experiences should make the world realize that a continuation of the way humans exploit the planet leads to the inevitable destruction of various forms of life that have co-existed and developed for billions of years, including the lives of humans. However, in Latour's view, there still is some time and space left to avoid dystopian scenarios. To achieve this, we will have to drastically reconsider how humans relate to the planet and to all living creatures on earth. Such new worldview should first and foremost depart from the observation that we live in a 'critical zone' where life has been made possible thanks to exceptional and accidental interactions of various conditions that have enabled, for billions of years, the more or less stable situation in which the planet finds itself today. We do not realize enough the preciousness of the interdependence of all elements that constitute the livability in this zone. Therefore we need to come 'Down to Earth' as Latour already explained in a previous book (2018).

The challenges which Latour posits are huge. One could despair when considering to what extent humans must transform themselves in order to achieve a new worldview and to create fundamental different ways of engaging 'in' the World. In spite of the vastness of this challenge, the author thinks this should be possible. Today, at the threshold of a new historic era, all these spheres will again have to be deeply reconsidered. New ways of questioning 'where we are' and 'what we aim for' will have to be formulated. We will have to open up in all directions, backward and forward, inward and outward, since we are confronted with a cosmological crisis.

One direction of crucial importance to look at in this respect is the domain of education. Various authors in this field of research, particularly the ones dealing with environmental and sustainability education, have begun to engage with Bruno Latour's analysis and suggestions, primarily on a conceptual level, but gradually also on an empirical level, while engaging with practices of teaching and learning in diverse contexts of formal and non-formal education and learning. Several of these attempts have also looked for inspiration in the ideas of the pragmatist philosopher of democracy and education John Dewey who, as some sort of precursor of Latour, has considered education and learning as transactional processes of the person(s) and the environment, while avoiding to locate the learning 'in' the individual. In his view, the outcome of such transactions is fairly unpredictable due to the complexity and

multiplicity of the interactions with the environment. By consequence the learning process is an 'open process' with diverse outcomes. In line with this, the chore of education should be to support learners to explore the interrelatedness of particular phenomena through different lenses.

IMAGINING AESTHETIC APPROACHES IN EDUCATION

Such approach to education and learning is called an aesthetic approach, whereby all faculties and senses of individuals and collectives are brought into play, in contrast with traditional, modern educational approaches which strongly emphasize cognitive and instrumental ways of learning. Aesthetic approaches however, are rather exceptional in educational settings in general and in settings of sustainability education in particular.

We need to further explore the aesthetic dimension of educational practices in line with the challenges put forward by Bruno Latour. Bengtson & Van Poeck (2021), for instance, have elaborated the concept of 'public inquiry' as an educational response to events that unexpectedly and intensely interrupt our everyday habits. In their contribution they argue that major disturbances such as Covid 19 or climate change have important educational potential or hold important opportunities for learning. The disturbance of our habitual actions may trigger 'an inquiry as a process guided by the need to reflexively engage with the situation leading up the disturbance as well as the quest for a way out of it' (p. 284).Such educational approach certainly corresponds with Latour's invitation to 'open up in all directions'.

However, we will need to explore better and in-depth the aesthetic component of these explorations. Too many attempts are still conceived as an 'intellectual' undertaking, while overlooking our affective and sensuous attachments to the world. This is also the case in Bengtson and Van Poeck's contribution. Their undertaking is still very much focused on 'reflexively engaging' with the situation at hand. We need more research and practices that combine thinking, doing, attending, perceiving, experimenting as integrated bodily experiences. An interesting example of such research has been demonstrated recently by Swillen et al (2021). They refer to Latour's invitation to set up 'critical zone laboratories' at several places. The authors have used this concept to describe and analyse a community arts experiment in Antwerp (Flanders) where artists, together with neighbourhood inhabitants, designed and constructed a new way of living together. This initiative indeed was aesthetic in the way described above, appealing to all senses and combining reflecting, acting, attending, perceiving, etc.. Other examples of such integrated aesthetic approach we have also presented in own paper on youth activism (Wildemeersch, Læssøe & Håkansson, 2021).

These are examples from the domain of non-formal education. Formal education has more constraints to realize such projects. However, it is important to explore also to what extent such experiments can be adapted to more formal educational settings, and how theories of education can be brought in line with aesthetic practices that seem to emerge at several places. Academics can learn a lot from practitioners, and practitioners from academics.

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The Reception of Education for Sustainable Development in China: A Just Transition?

Ronghui (Kevin) Zhou

Education for Sustainable Development (ESD) entered China almost three decades ago. With helps from international organizations such as UNESCO, the Ministry of Education created a number of projects to foster ESD development in the education system in China. As the world's second-largest economy and a country containing nearly a fifth of the world's population, China has the potential to make bigger impacts on the entire world's sustainable future. Therefore, this essay raises the question: what kind of social transformation does the Chinese government seek to achieve with the ESD? To answer this question, this essay uses 'just transition' as the theoretical framework to discuss the notions of ESD in the education policy in China.

Just transition is a concept that is often used in the energy transition. The original meaning of 'just transition' is from the labour movement – the idea that works and families whose livelihoods will be lost during energy transition should receive support from the state (Eisenberg, 2019). In the broader context, just transition emphasize the importance of not continuing to sacrifice of vulnerable groups for the sake of advantaging others (Eisenberg, 2019). Hence, 'just transition' offers a holistic view to capture the transition process, engaging social, economic, environmental, and sustainability justice that are often neglected in the context (Wang & Lo, 2021). In other words, just transition pays attention to the equity and justice issues associated with the transition process, seeks to achieve a balanced and sustainable transition process (Stevis & Felli, 2020). In this study, just transition is used to evaluate the transition of meanings of ESD in policies in China. Overall, this essay argues that the unjust transitions of ESD encourage an unbalanced societal transformation for China in the future.

Orientations of Sustainable Development (SD) and ESD were 'disconnected' in China for more than a decade. This disconnection signals the first transition of ESD in China. According to China's National Report on Sustainable Development (1997, 2002, and 2011), the extensive focus of SD lies on economic development and sets aside ecological development due to political interests. The notion of ESD, according to these reports, nonetheless appears to focus on the neglected domains of SD, the education for environmental protection, and building a harmonious relationship between humans and the environment. Environmental Education (EE) was seen as ESD during this period. This contradiction between SD and ESD orientation questions the transition of ESD in China, from an international recognition to a domestic education focus that only highlights environmental protections. Furthermore, while the original purpose of ESD is to establish and educate the developmental issues from SD, the orientations of SD and ESD were disconnected in China. This transition of the ESD concept in China hence encounters concerns over the scope of ESD and questions the binding relations between SD and ESD.

The reconnection of SD and ESD was forged by Xi Jinping, the current president of China, who promoted the environmental agenda 'Two Mountain' theory and 'Ecological Civilization' since the late 2000s. The 'Two Mountain' theory believes in the equal importance of 'Gold Mountain' (economic development) and 'Green Mountain' (ecological development) in the sustainability agenda in China (Pan, 2018). Furthermore, the discourse of 'Ecological Civilization' establishes the environmental considerations and builds ecological consciousness for citizens (Hansen & Liu, 2018). In the Outline of the 13th Five-Year Plan for the National Cause of Education (2017), the term ESD is listed and redefined under the term 'Enhancing Ecological Civilization Competence.' Given the fact that there is still

no official definition of ESD in China, the notion of 'Ecological Civilization' hence replaces the functions and purposes of ESD. Orientations of SD and ESD finally reached an agreement in the environmental perspective of sustainability.

However, this recent overturn of SD and ESD orientations is problematic for two reasons under the lights of just transition. The first reason is that the sudden inversion of developing environmental agenda in China is often being described as 'authoritarian environmentalism'. 'Authoritarian environmentalism', according to Gilley (2012), refers to a public policy model that "concentrates authority in a few executive agencies… [and] public participation is limited… [, and they] are expected to participate only in state-led mobilization for the purposes of implementation (pp.288)." Authoritarian environmentalism advocates "public ignorance, public irrationality, free-riding, … the lack of availability heuristics to motivate social action, and multi-stakeholder veto players" (Gilley, 2012, pp.292). Li & Shapiro (2020) describe this type of environmentalism as a political tool to penetrate the power of the state into citizens rather than a fundamental approach to fix the environmental problems. While this essay does not intend to criticize the political cause of the Chinese government, the politically oriented reunification of SD and ESD and the political implications behind 'Ecological Civilization' indeed create inequality and injustice issues for the learners and education stakeholders due to the lack of involvement.

In fact, the second transition of ESD, from EE to the discourse 'Ecological Civilization', further stretches the unjust transition of ESD in China. In the 2017 national education plan, the scope of ESD has been narrowed to education for diligence and thriftiness, environmental awareness building, and forming sustainable development values. 'SD awareness, knowledge, and concept' mentioned in the policy are built on the premise of education for the diligent and thrifty, and for environmental education. Compared with the UNESCO framework of ESD, 'Ecological Civilization' only targets ecological education. In addition, although orientations of SD and ESD are collated, education content related to economic development are hardly mentioned in the policy. Topics in the social pillar of the UNESCO ESD, such as lifelong learning and social inequalities although are mentioned in other education priorities, are excluded in the scope of ESD in China. The disparities between the UNESCO framework of ESD and 'Ecological Civilization' hence create two inequalities for learners in China. The first inequality is that Chinese learners lack access and awareness to the full scopes and content of ESD in the increasing globalizing and sustainably world. The second inequality is the social transformation that 'Ecological Civilization' can promote in the future. Now, 'Ecological Civilization' portrays an environmental-friendly society by enhancing the existing and future generations' ecological awareness. This social transformation, however, is a biased and unbalanced approach to a sustainable future given the absence of social and economic sustainability.

Overall, the reception of ESD in China is displayed. The notion of ESD has become a domestic discourse, 'Ecological Civilization'. By exploring the SD and ESD orientations and 'Ecological Civilization' in policy documents, an unjust transition is revealed and implies a defective and possibly, unsustainable social transformation for the future.

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SUB-THEME 4

BOUNDARIES BETWEEN ESE RESEARCH AND PRACTICE – SOME OBSERVATIONS AND CONTEMPLATIONS

Lausanne Olvitt, Jutta Nikel, Arjen Wals and Heila Lotz-Sisitka

THE THEMATIC FOCUS

There have been numerous significant shifts in the field of environmental education research over the years in which this invitational seminar has been 'engaging the debates'. In the early days of the field, one such a shift occurred from a strong focus on research to understand attitudes and perceptions in ESE research to a set of debates about 'research paradigms'. This big shift in the early 1990's emerged from the Rick Mrazek (1993) dialogue at NAAEE in the late 1980's and was then followed through in the especially the 1990's works of *inter-alia* Huckle, Hart, Robottom and Fien amongst others who brought the issue of a 'theory of methods' into the debates. This raised research interest in the political and epistemological commitments that researchers make when they undertake research in the field of ESE, an issue that has been widely deliberated on over the years (cf. for example the *Handbook on Environmental Education Research* (Stevenson et al., 2013; Hart, 2013)).

Enriched by extensive debates and developments in social theory and philosophy, ESE research continued largely along lines of critical research, hermeneutic research and/or post-modern or post-positive forms of research for roughly a twenty year + period (cf. Lather 2006). More recently we also see (in parallel to earlier trajectories) a commitment to post-qualitative research (cf. Lather and St. Pierre, 2013) arising with the articulations of new materialism and speculative realism and following Deleuze, Latour, Badiou, Barad, Messilloux amongst other research influences.

So why a focus on the boundaries of ESE research and practice now? What is the significance of this in an emerging ESE research methodological field? Does it signal a closer interest in the onto-epistemic grounding of research, or the critical question of so what? When we do our research – does research matter, and to whom, and what are the consequences of a long history of varieties of disembodied, disentangled and apparently 'objective' forms of research in our field? Should ESE research embroil itself in practice, and in what way(s) is ESE a contributor to practice? Should we maintain or dissolve boundaries between research and practice, and if so what does this mean for the ontological, epistemological and axiological dynamics of ESE research? And what if ESE research *is* a co-engaged or embodied practice that is by its very definition and constitution change oriented? How do we then think of and conceptualise our research and the boundaries between research and practice if and where these exist? These are some of the wider questions that were brought into focus in this invitational seminar which queried what kind of research is needed when we think about the nature of the climate crisis.

The call for contributions sought out "a rich variety of contributions that can foster critical and inspiring discussions about topical issues relevant for ESE research 'in times of climate crisis'", including a probing of the boundaries between research and practice. The intention was specifically to examine the manner in which ESE research grounds itself (or not) in an ambition and engagement to contribute to improving ESE practices. The call recognised that this was not an easy space to occupy, as researchers with such change oriented intentionality's, often face perceived or historically created boundaries between research, education and services to society. The assumption is that crossing these boundaries (if we indeed can delineate them) and pursuing fruitful research practice collaborations, including under the newly emergent banner of 'co-engaged research' (cf. for example Lotz-Sisitka et al., 2016) within society and the more-than-human world, brings about a variety of challenges as well as valuable opportunities. What did researchers make of this call and challenge?

As was expected, researchers tackled the theme by moving beyond a narrow focus on strictly delineated 'climate education', encompassing the wider challenges the climate crisis has for ESE research and practices. The guiding questions put forward in the call for this theme included:

- How do we - or how can we - cross the boundaries between research and practice to co-create better ESE practices?
- What kind of research does this require in terms of questions to address ('objects of knowledge'), research design and empirical ('objects of study')?
- What are fruitful collaborative settings?
- Is there a risk of conflation of research and practice? If so, how to avoid it?
- How to understand the (complementary?) roles of researchers and practitioners and how to shape the relations between them?
- How to deal with local differences in a globalised research landscape?

THE INPUT ESSAYS IN A NUTSHELL

The eight essays collected under this sub theme represent a wide range of takes on settings of research practice collaborations and hence understandings of boundary working and role taking. If an approach to group the papers is aimed at one might think along the lines of papers with a tendency towards partnerships and collaborations in the context of

- *knowledge dissemination,*
- *co-construction processes and*
- *self-reflective practice.*

All three implicate different relations between research and practice and to questions over the quality of the cooperation ("more fruitful", "better",...).

In the first group, most closely located to questions in the field of knowledge dissemination **Eva Östlind** addresses ESE research's responsibility to respond to teachers' explicit request for assistance in responding to questions over how to enact on ESE in practice, more specifically on the educational drama in ESD. She raises methodological questions over how to offer specific knowledge about what works, why and what teaching approaches to recommend. **Sule Alici** is concerned about the relevance of ESE Research in teaching practices in remote places. The reconstitution of former "Village Institutes" are discussed as a research and practice place closely linked to local needs and the local natural environment.

In the second group (concerned with co-constructive practices and collaborative learning), **Jutta Nikel** points to the Field of Research-Practice Partnerships as a strong and established research field as a field of reference and emphasises the need for further empirical work on co-constructive processes in the context of ESE work. **Gavin McCrory** sheds light on the process of 'framing of challenges' in collaborative settings by arguing for collective learning on "how to frame challenges, to bring these objects of learning into being, whilst recognizing the double-burdens and double-binds that they may lead to". **Emily Sprowls** proposes research in science education that examines collaborative learning through a justice-focused lens along the intersecting boundaries of research/practice, science/education and teacher/student. **Sara-Jayne Williams** and **Rosamund Portus** introduce the principles of co-production by Hickey et al. (2018) and propose, based on the empirical study with respect to youth focused co-productive practices, two additional dimensions namely empowerment and opportunity.

Thirdly, researchers responded to the group's theme by considering ESE related to a researcher' self-reflective practice /researcher's reflexivity. **Lausanne Olvitt** introduces exploratory perspectives on the relevance and potential contribution of phenomenological approaches to ESE research, especially Goethean-inspired observation. The contribution of **Cae Rodrigues** elaborates on critical ecopedagogical engagement/immersion as "key to the potential deconstruction of a world in/of crisis, as the complex nature of change is inherent to ecological praxis".

ESE RESEARCH CHALLENGES AND PATHWAYS

The group's deliberations raised more questions than they resolved but they were an important stimulus for reflecting on the limitations and inherent contradictions in the field of ESE. At the core of our discussions seemed to be a tension between critique and transformative action: the field of ESE research is oriented to critiquing sustainability challenges, including the ways we work, teach, research and live with others, but we are also implicated in those same challenges and hence seemingly unable to make a clean break from them. The following question encapsulates the many contours of the group's discussions and hopefully invites ongoing critique and innovation about ESE research praxis. We ask:

What would ESE research look like that acknowledges slower time and spaces in-between?

In broad terms, the field of ESE seems to be at a critical crossroads: continue with the tried and tested ways of working as ESE researchers, or push more boldly into a radically new orientation. There is general recognition that different ways of working are needed, but as individuals and institutions, we seem to be not fully ready to articulate that turn. Our group's attention was focused on time, boundaries and spaces in between, but these are only a few

of the important touchstones of relevance to quality ESE research theory and practice. Below, is a synopsis of the concerns we deliberated in relation to this question, followed by some potential pathways for ESE practitioners to explore.

Methods and methodologies: Co-production is demanding of time, attentiveness and reflexivity

Quality is at the core of effective ESE research and, in our experience, is strengthened by strong relationships, reflexive processes established over time, authentic contexts, and co-engaged ways of producing knowledge that are based on trust and respect. These features require a particular type of attentiveness that cannot be rushed or manipulated; they require careful attention to power, silences and movement; they challenge us to work with diligence and care at the 'boundary spaces'.

However, not all the established theories and research methodologies and methods in the field of ESE align well with a commitment to slowness, depth and attention to spaces in between. This poses a challenge for us when, on the one hand, we clearly express a commitment to this orientation yet, on the other hand, many of our research experiences, resources and 'comfortable' ways of working constrain such change.

Scope and boundaries: Shifting from individuality and fixed spaces to relationality and open process

While the immediate challenge is for us to transform our individual research practices, we acknowledged that the above mentioned tension is entangled with the cultures and economies of higher education institutions and research funding frameworks whose timelines are often incompatible with slow scholarship and authentic knowledge co-production. These dynamics of the field of ESE are embedded in even larger societal systems dominated by unsustainable economic models and colonial epistemologies. ESE research practice is always in relationship with influential global discourses around time, space, boundaries, relationships and forms of collaboration (such as discourses of linear time, urgency and sustainability). This makes it even more difficult (yet more urgent) to pursue ESE research with slowness, reflexivity, boldness and care at the boundary spaces.

Looking back and forward

In the wrap-up of our group's work, Arjen briefly reflected on the history of the Invitational Seminar in terms of how patterns and themes have shifted and, in some cases, remained the same. Having attended several of the seminars over the years, including the first one held in 1993 in Denmark when he was an emerging scholar himself at the age of 29, he is in a unique position to do so. A key aspect of the reflection was the observation that in 1993 there also was an air of resistance in the group: researchers found each other in resisting empirical analytical 'positivist' forms of research and the tendency within environmental and - at the time explicitly included - health education to focus on changing individual behaviour using education as an instrument. Alternatives that were explored were socially critical and hermeneutical-interpretative forms of research. Issues around democracy, inclusivity and participation were central in conversations and the idea of action competence was taking root.

Nowadays these ideas have become mainstream and, perhaps even co-opted and commodified as funding agencies and journals eagerly support them as much needed 'innovations'. At the time the 'ecological' was considered as somewhat dated as it was interpreted as love for nature and as something rather exclusive. Today the ecological is making a strong comeback but more as an ontological turn towards relationality and entanglement, combined with a plea for decentering the human. There still is an element of resistance in the group gathering today, but now it is more the resisting of systemic global dysfunction and the 'enstranglement' in the cultures and systems that lie at the heart of this dysfunction.

The question raised in our group of what does of should "ESE research look like that acknowledges slower time and spaces in-between?" exemplifies this. We can add: what kind of mandate do we as ESE-researchers have on a dying planet? Is it time for 'research-as-activism' or will we then fail both as researchers and as activists? These are key existential questions we need to be asking ourselves.

SEEKING HOPEFUL PATHWAYS

Our group's deliberations led us to suggest four key words to orientate us as we engage with challenges in ESE research in times of poly-crisis:

- Aspiring
- Resisting
- Experimenting
- Researching

Approached vaguely in sequence, we suggest that the stages of (i) clarifying our aspirations, (ii) being explicit about our points of resistance, (iii) being bold enough to experiment (even playfully) with new ways of doing ESE research, and (iv) researching this forward movement, might be a useful approach for various types of projects and concerns. For example, if we want to reflect on the challenge of 'boundaries', we might start by asking: 'what are our aspirations regarding boundaries in this organisation / community / project?'. We then ask, 'what needs to be resisted so that we can come closer to that aspiration?' This is the invitation for creativity and innovation (the 'experimenting') in our ESE practice in terms of boundary work. That, in turn, requires ongoing research so that we keep the field dynamic, reflexive and responsive in how we theorise and practice at or across the boundaries.

Our choice of the present continuous tense here (using 'ing' words) is intentional because we wish to highlight that these are things we do, and must continue to do. This simple four-word sequence applies at many levels and may help us to 'stay with the trouble', as Donna Haraway (2016) urges us to do.

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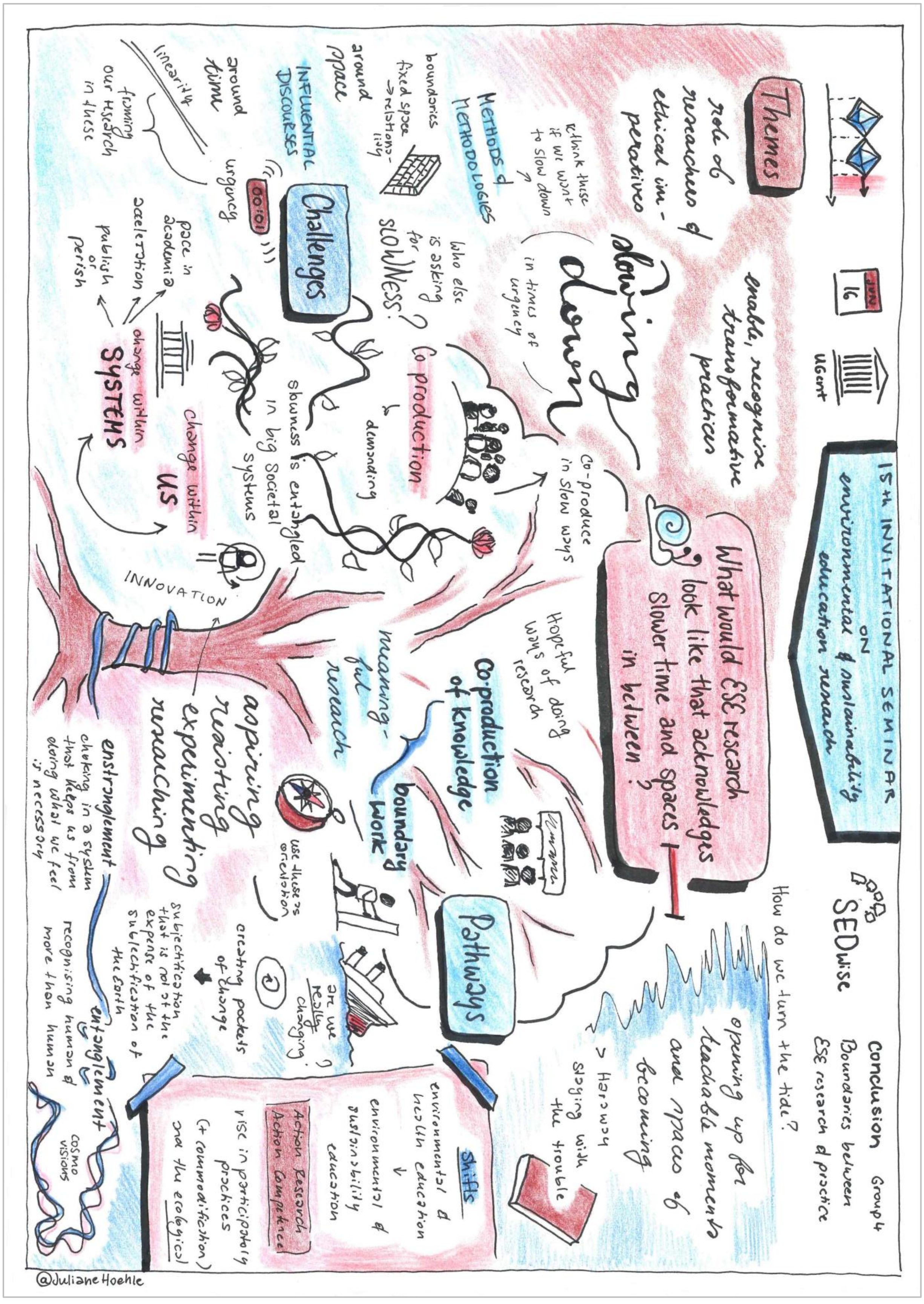
15th INVITATIONAL SEMINAR ON environmental & sustainability education research
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SEDwise
Themes
role of researchers & ethical imperatives
enable, recognise transformative practices
slowing down
What would ESE research look like that acknowledges slower time and spaces in between?
Co-produce in slow ways
Hopeful ways of doing research
Co-production of knowledge
boundary work
meaning-ful research
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Methods & Methodologies
Influential Discourses
Challenges
who else is asking for SLOWNESS?
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Action Research
Action Competence
Conclusion Group 4
Boundaries between ESE research & practice
How do we turn the tide?
opening up for teachable moments and spaces of becoming
entanglement
entrangement
@Juliane Hoehle

Possible New Initiatives to Drive Change for Sustainability: Turkish Context

Sule Alici

Intergovernmental Panel on Climate Change (IPCC, 2018) anticipated that global temperatures will reach 1.5 °C above pre-industrial levels with a 0.5 °C rise until 2052. The impact of this rise can be seen as extreme heatwaves, droughts, floods, heavy rain, storm, fires, loss of species, increase in sea levels, and destruction of human health and wellbeing (such as Covid19) (IPCC, 2018; Watts, et al., 2018). In addition to Covid19 influences on the world, in Turkey, last year we already faced forest fires damaging the ecosystem because of extreme heatwaves during summer time. Although we have to struggle with these serious consequences of global warming, we cannot take concrete steps to preclude/stop this trajectory locally and globally. As Evans (2019) accentuated, one of the reasons might be educators/ practitioners who are sensitive about sustainability issues "face with a void in policy and/or leadership to drive change for sustainability" (p.8) and thus, we should focus on education. While focusing on education, we should take innovative approaches and ways to strengthen the connections between ESE research and practice. Otherwise, we- ESE researchers- just concentrate on actualizing research and increasing in publication rate in our bubbles without being aware of our studies' impact on educators' transformation and being change agents. In other words, we should question ourselves in terms of the researcher's role and/or position. Where do we see ourselves? Are we close to making knowledge or making a change? For me, I am close to making a change, and thus we should break our bubbles and aim to make research on behalf of the biosphere.

To break the bubbles, lots of attempts in various sectors such as economics, health, and industry can be made. However, I mostly concentrate on education and its connected nets. For me, one of the ways of diminishing the boundaries between ESE research and practice can be co- creating better ESE practices via both pre-service and in-service teacher education. To actualize this, there are some initiatives from different countries. One of the examples is the "Mainstreaming Change Model" that emerged in Australia. Ferreira and Ryan (2012) developed this model by combing three main approaches- resource development, action research, and contextual change. Moreover, this model underpinned by systems theory takes attention to the components of systems that must work together to design and enhance cultural and educational alterations needed for sustainability (Ferreira & Davis, 2015). (See Appendix) As shown in the appendix, the system that includes interrelated elements is bounded and human-constructed. The elements can be within and outside the system. The system can be hierarchical and consist of sub-systems. There are change agents or hubs which are key influencers. These hubs can be activities or particular individuals. To provide interactions within the system, positive or negative feedback loops are founded (Ferreira, 2019). To put it another way, "creating process" and "criticizing process" nourish each other.

Ferreira, Evans, Davis, and Stevenson (2019) shared their experiences and key lessons that they learned about how sustainability can be embedded in Australian teacher education by using this model. They also elucidated the model's steps and the instructions in each step. Furthermore, they discussed the rationale of using this model and made an explanation about how this model provokes the transformation in different teacher education institutions by presenting descriptive examples year by year. After the examination of five different cases using this model, Davis and Davis (2019) pointed out the distinct results which mean there is no approach "one-size- fits-all but,

rather, is a process" applying into different context (p.45). The analysis of Turkish teacher education in terms of embedding sustainability indicated that such a model in Australia has not been developed yet. However, in earlier times especially 1940-1954 some attempts about this issue were perceived. At those time, village institutes (Koy Enstituleri) were established based on the rural areas' needs. To foster rural life sustainably, students were trained in reading, writing, arithmetic, and characteristics of the rural area and promoted to gain skills in agriculture and other jobs (such as blacksmith, and carpenter) (Ayas, 1948, Tonguc, 1946). The theoretical roots of these institutions are based on Ismail Hakki Baltacioglu's social school theory (Baltacioglu, 1942). The curriculum of these institutions gives importance to teacher candidates' outdoor and natural experiences developed based on Dewey's recommendations (Dundar, 2002). Village institutions encompassed the principles of democracy, community collaboration, problem-solving in real-life situations, and environmentally related principles (Çaglar, 1999, Cakiroglu & Cakiroglu, 2003). In the light of this information, it can be stated that the curriculum of village institutions was also related to education for sustainability and SDGs especially SDG 4- quality education- and SDG 11-sustainable cities and communities. When village institutions are compared with Mainstreaming Change Model and three approaches- resource development, action research, and contextual change- included, it is seen that it also encompassed three approaches. However, the philosophy of village institutions was abandoned due to political issues and ideological issues (Basgoz, 1995; Turkoglu, 2000). Based on the 21st century's skills, Turkey's local and regional needs, Mainstreaming Change Model, and critical participatory action research village institutes can be regenerated and launched. In this way, sustainability can be embedded into Turkish teacher education more effectively.

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Learning to Frame Complex Sustainability Challenges In Place: Exploring Opportunities, Tensions and Trade-offs in Educational Approaches to Transformation

Gavin McCrory

> "The idea of problem-solving, so central to the idea of mode 2-knowledge, is problematic because it implies that—with sufficient imagination, daring and creativity—a solution can be designed. But issues of sustainability opens up for a world in which solutions cannot be designed, in the sense that a problem has been entirely satisfactorily met; there are always repercussions, unintended consequences and loose ends"
>
> Barnett, 2004, p. 251

What if understandings of sustainability are emergent in context, and shaped by multiple perspectives, temporalities, and spatialites? What if educators and students need to collectively learn how to frame challenges, to bring these objects of learning into being, whilst recognizing the double-burdens and double-binds that they may lead to? In moving away from positivist understandings of framing as neutral, objective, static and ultimate, one can question whether mainstream approaches to education are equipped to collectively engage with transformations in place. This proposal is grounded in this conviction, as well as the hope that flourishing educational approaches already exist to grapple with framing sustainability challenges. This is because, in learning spaces that are simultaneously problem-based and solution-oriented, framing is an everyday activity of utmost importance (Svihla and Reeve,2016; Ness, 2020).

Framing is "the process by which people develop a particular conceptualisation of an issue or reorient their thinking about an issue" (Chong & Druckman, 2007, p. 103). Frames and framing processes are essential in approaching wicked challenges, referred to as messes (Ackoff, 1973), problematic situations (Checkland and Poulter, 2010), matters of concern (Latour, 2004), or in-between issues (Vilsmaier and Lang, 2015; Ison, 2017). It is understood as an unfolding process of meaning-making where the categorization of a complex reality occurs (Benford & Snow, 2000). The ways in which sustainability challenges become framed are therefore influential in how they are learned, deliberated upon and acted upon. Myopic attention to challenge framing has performative implications on action. By overlooking the value of framing, eventual responses may not only fall short; they may even displace, prolong, or exacerbate situations by further entrenching unsustainability (Ross & Mitchell, 2018). In systems thinking, questions of boundaries and values are central in framing, where one both searches for underlying, root causes and conceives of ethical action (Jackson, 2010; Meadows, 2008; Midgley, 2000). Further, challenge framing appears in processes of learning and transformation. Mezirow (1997) characterizes transformative learning as "changes in frames of reference", (Bateson, 1972) as "changes in world view" and Meadows' (1997) deepest leverage points operate on a level of mental-model, worldview, and paradigm.

In contrast to a procedural step in a problem-solving process (Will and Rydén, 2015), my interest lies in viewing sustainability challenges as reflexively entangled with various commitments to action, where one must learn one's way forward. This understanding of "challenge" aligns more with a view of sustainability as situated, whose structure and meaning unfolds through collaborative engagement. Rather than problems and solutions to be singular and fixed—as has been the case in engineering sciences and STEM subjects that deal with problems of a complicated-mechanical nature—it is possible to see issues of complex-social nature (Cf.Andersson et al., 2014) as

subject to processes of framing. Given their ill-structured and wicked nature, one must approach real-world problems as subject to continuous change, becoming continuously framed or in need of continuous framing (Rittel and Webber, 1973). In higher education, authentic contexts and challenges of a wicked nature are argued to be conducive to transformative learning processes (Mezirow, 1997) and agency expression (Lotz-Sisitka et al., 2015), providing support for deep reflection on the assumptions behind certain environments, courses, and challenges.

In this proposal, I highlight the agenda of education for, as and with sustainable development to be problem-solving, solutions-seeking or challenge-driven (Thomas, 2009; Tilbury, 2012). This agenda advocates for both science and education to be forces for good, and the university to be seen as a locus of transformative potential (Chatterton, 2000; Trencher et al., 2014; Moser, 2021). In education for sustainable development (ESD), students are expected to both unravel the complexities of sustainability and develop agency in acting (UNESCO, 2014). Conventional notions of the classroom and the curriculum are often disrupted, in favour of "real" and situated societal settings where students shift from consumers to producers of knowledge (Moore, 2005; Waters, 2017; Bornemann and Christen, 2020). These spaces bring a diverse and inclusive set of pedagogies that mobilize hand, head, and heart (Sipos et al., 2008), recognizing the limits to transmission approaches to learning. ESD also recognizes that transformative and transgressive forms of learning necessitate learning objects that can attune to diverse representations of sustainability in place. Yet sustainability challenges are routinely reduced to simple, fixed objects at the beginning of an educational or research process, so that they can be bound from within a course (Eden and Ackermann, 2013; Archibald, 2020). Problems are also presented or shaped "as-is", or according to a specific understanding of an issue at hand, from the view of the teacher. Implicit in such endeavours through the labelling of "problems" is the assumption that there is a degree of resolution or solvability possible.

To date, we know little about how we as educators and researchers can support challenge framing, and how students experience and learn to frame. This is partly due to prevailing tendencies in sustainability-oriented education, where students are invited to solve pre-established issues, but not frame them (Tilbury, 2016; Pohl et al., 2020). Inspiring learning spaces with grounded procedures to challenge framing are still emerging but are less researched. Currently, they come from design contexts (Beckman and Barry, 2012; Cf.Irwin, 2015) focusing on e.g., framing design interventions across multiple scales on pre-defined topical challenges for fostering social learning (Lopes et al., 2012; Famet al., 2020). This proposal points towards the growing need to better understand how framing-oriented curricula operate in practice and come into meaning for those involved. In addition, it emerges from a curiosity in how higher education institutions can provide conditions conducive to open-ended curriculum with transformative sustainability ambitions. The goal of this proposal is threefold. Firstly, it serves as an invitation to other ESE researchers, educators, and co-learners to explore the ways in which we can shape sustainabilities, which are emergent in context, as part of our learning spaces. Secondly, this proposal hopes to create a. shared space where inspiring approaches to education can learn from eachother as part of a field of difference. Thirdly it offers an opportunity to situate the commonalties and challenges, dilemmas and paradoxes, so central when framing sustainability challenges, in environmental and sustainability education research.

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On the Working and on the Researching of Boundaries in Research-Practice Collaborations

Jutta Nikel

ON THE WORKING OF BOUNDARIES

My interest in this topic is grounded in an ongoing research project I am involved in. During, for example, discussions, reworking of documents, future planning and consultation sessions boundaries emerge and boundaries are implicitly worked on. There is potential to address challenges and increase the potential of this collaborative setting by exploring explicit, e.g. how to understand the roles of researchers and practitioners (biosphere reserve office as accreditation scheme provider, schools) and how to shape the relations between them?

My recent research is grounded in an ambition and engagement to improving ESE practice; in more detail the evaluation study aimed for providing insights to improve the practices of a green school accreditation process and of the practices of participating schools to make lasting changes towards ESE. Our evaluation findings provided more in-depth understanding of the contextualisation of the accreditation criteria by the school (see Nikel, Rollet & Stüwe, 2021). The accreditation scheme "Primary schools to become Biosphere schools" is developed by the administrative office of the UNESCO Biosphere reserve Swabian Alb. Our task was to evaluate this pilot phase of the accreditation scheme including seven primary schools over a year's time. The recommendation we presented in the final report of the research were taken up by the administrative office and led to the invitation to continue our work in a collaborative setting. In this way. We as researcher have the opportunity to take part in the implementation of our recommendations and we become the third party in the collaboration next to the accreditation provider and the schools. In our particular context the following questions with respect to the collaborative setting and its impact on the project processes and outcomes come to the forth:

- Who owns the process enacted in practices in – broadly speaking – the becoming of a biosphere reserve school (accreditation process, school improvement processes, quality management process)?
- What is the frame of reference for the practices of and how is it developed and approve in this collaborative setting?
- What are possible frames of reference for a "fruitful collaboration" of these three parties (accreditation scheme provider, schools, researcher)?

A scan on the available literature on frames of references for fruitful research practice collaboration in education leads on the active academic field of "Research-Practice Partnerships (RPPs). These RPPs are defined as "long-term, mutualistic collaborations between practitioners and researchers that are intentionally organized to investigate problems of practice and solutions for improving district [and state] outcomes" (Coburn et al., 2013, p. 2). While it can be assumed that the majority of these RPPs work within an action research framework, the challenges identified are common- to other collaborations under other framings: frequent turnover, lack of trust and a common language, and problems caused by complex contexts (see Coburn & Penuel, 2016). Most recently Scholz, LaTurner and Barkowski (2021) introduce a "tool for assessing the health of research-practice partnerships". It attempts to monitor progression of "health" regularly along five dimensions to be addressed by researchers and practitioners

to sustain an effective collaboration which deal with issues like trust, conducting rigorous research to inform action; goal orientation, knowledge production on improvement efforts more broadly and capacity building (see ibid., p.1). There is potential to interrogate heuristics and tools (e.g. from the field of RPPs) concerning fitting in the ESE context as well as local and thematic differences.

ON THE RESEARCH OF WORKING BOUNDARIES

Further, my interest in this topic is caused by a close link to a methodological approach we have developed in another past research project. This approach evolved and was used in a qualitative research study on how diverse groups of actors on national level in Germany coordinate their action during the ESD decade on ESD implementation in the education system. The heuristic we introduced to explain the different paths such coordination of action took in several German federal states, focused on how direct interaction of different actor groups (administration, civil society) turned out and hence impacted on structural framings of each actors group thinking. In this interview data analysis approach the focus is on identifying incidence/events/situations in the accounts of interviewees where they describe a "working boundary" moment /experiences. This is possible in reconstructive qualitative research in which participants (researcher, practitioners, …) reflect on their collaborative work and the setting. Analysis questions such as "What boundary was worked on? How did they work the boundary in this incident?" led to the identification of different types of "boundary work" triggered by different mechanism (see Nikel & Haker 2016; Bormann und Nikel 2017).

This analysis method might be potentially relevant and interesting for **researching boundaries in research-practice collaborations**. In this way, "crossing or working on boundaries" becomes the "object of study" with the aim to shed light on understanding the role of trust, a common language, a joint understanding of goals and on complexity of contexts of topics and how it progresses and changes.

The Invitational Seminar on Environmental Education Research as a unique dialogical platform provides the space for interrogating these anchor points and ideas on the fourth sub themes and the ESE research in general.

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Planetary Urgency, Researcher Reflexivity and ESE Research: Questions Arising from an Initial Exploration of Goethean-inspired Phenomenology

Lausanne Olvitt

Many of the theoretical and methodological frameworks that are currently influential in Environment and Sustainability Education (ESE) research in South Africa foreground interventionist research, activism, causal explanation, critique, social-ecological transformation and decoloniality. These frameworks guide ESE researchers to design, implement and report on research in particular ways, hence influencing how social-ecological phenomena, learning and social change are understood and enacted. In this essay, I present some exploratory perspectives on the relevance and potential contribution of phenomenological approaches to ESE research, especially Goethean-inspired observation.

Johann Wolfgang von Goethe (1749 – 1832) was a German poet, novelist, playwright, politician and scientist whose works continue to influence many literary and scientific circles. His approach to natural scientific research, that he named 'delicate empiricism', has very strong similarities to contemporary empirical-phenomenological research in the social sciences. Goethe (1792/ 2010, translated by C. Holdrege, p. 19) wrote:

> As soon as we consider a phenomenon in itself and in relation to others, neither liking or disliking it, we will in quiet attentiveness be able to form a clear concept of it, its parts and its relations. The more we expand our considerations and the more we relate phenomena to one another, the more we exercise the gift of observation that lies within us.

Robbins (2006, p. 1) describes Goethe's delicate empiricism as, "a participatory, morally-responsive, and holistic approach to the description of dynamic life-world phenomena". He explains that a delicate empiricism rejects the notion that, to engage with a phenomenon, one must step back from it and cultivate a detached, intellectual perspective. Rather, "it is to dwell with it and deepen the phenomenon" (p. 5)

These fundamental understandings of Goethe's work have challenged me and a small group of colleagues since our participation in a year-long course[11] on 'Reflective Social Practice' offered by the Proteus Initiative[12] in 2021. The course's practice was phenomenological, located strongly in Goethean observation but extended beyond nature observation to reflective observation of social practice. As Allan Kaplan of the Proteus Initiative observes:

> But Goethe worked with nature. Social phenomena are even more complex than natural ones. Particularly because they entail the element of self-consciousness. We are so immediately involved, so undeniably a part of what we are attempting to understand. (2005, p. 314).

Part of the motivation for our participation in the course was to explore opportunities for further collaboration between the Proteus Initiative and the ELRC, most especially the possibility of offering a Masters in Reflective Social

[11] The 16 participants on the 2021 Reflective Social Practice course were involved with various sustainability practices, most especially in government-funded environmental programmes, the NGO sector and ESE. Five immediate colleagues from the Environmental Learning Research Centre (ELRC) in the Education Department at Rhodes University included academic staff, doctoral and post-doctoral scholars involved with various forms of research and scholar activism in the field of Environment and Sustainability Education.

[12] http://www.proteusinitiative.org/

Practice for social learning practitioners in the biodiversity conservation and community-based natural resource management (CBNRM) sector in South Africa.

A profound exploration of reflective ESE practice unfolded slowly and carefully across the course's four modules and assignments. As learners, we benefited from a deliberate yet highly responsive pedagogy where it was not uncommon to revise the day's planned activities because an important turn in our collective learning was still underway and – we were assured – "it takes the time it takes". As novice observers, we grappled with an observational practice that seeks coherence, internal vibrancy and the 'essence' of a phenomenon, be it plant or social process. As practitioners, however, we were unsettled by the tension between the potentially transformative power of such an approach to social process, and the inherent logic and tempo of our so-called 'real work' outside the course. Whether in higher education, parastatal environmental programmes or the NGO sector, our professional practices were characterised by time-bound prescriptiveness, urgency, explanation, critique and strategic intervention.

For obvious reasons, much scientific research, activism and mainstream public discourse related to sustainability transformations conveys a sense of crisis. For example, the International Panel on Climate Change's account of the 'climate crisis', and the 'climate emergency' described as, "a code red for humanity" by the United Nation's Secretary-General in August 2021 (United Nations, 2021). The primacy of these challenges should of course be amplified, not disputed or reduced. However, within society's predominant culture of linear development, management and control, and within "the accelerated time and elitism of the neoliberal university" (Mountz et al. 2015, p. 1237), the *primacy* of crises such as climate change can become conflated with fast-track educational responses that are institutionally strategic, measurable and cost-effective.

Within this culture, ESE researchers work hard to advance theories, concepts, models and learning resources with the potential to transform our world for the better. The immense value of such responses is at the heart of this essay and is certainly not called into question here. Rather, the questions I now seek to explore with the wider ESE community pertain to strengthening such theories by considering what scope there might be for a Goethean-inspired reflective social practice in ESE research. In dialogue with my colleagues and co-learners from the course, I now seek to:

- place the urgency of societal transformation in dialectical relationship with the necessity of 'slow scholarship' and reflexive, phenomenological responses to social learning processes;
- explore ways that, "undogmatic, self-critical exploration, carried out in careful dialogue with the phenomena at every step" (Holdrege, 2010, p. 21) can flourish in ESE research in the face of urgency;
- expand the Goethean-inspired scholarship associated with this approach to seek (or develop) resonances with African and other global south scholarship.
- find out how or if other countries and ESE research groups are engaging with similar questions.

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Explorative Drama Workshops and the Role of Research for ESE Practice: A Comparative Project for Praxis Development in Higher Education for Sustainability

Eva Österlind

Environmental and Sustainability Education can be challenging for both teachers and students for several reasons; value-loaded academic content, emotional and existential dimensions that are unsettling and even scary (Læssø, 2010; Österlind, 2012). These challenges could be expected to decrease over time, as the knowledge base grows and the subject becomes more established. On the other hand, the challenges could also increase as the magnitude and urgency of the environmental crises become more visible. To counteract this, there has been an emphasis on transformative and transgressive learning (Lotz-Sisitka et al. 2015), the need to develop action competence (Besong & Holland, 2015), and an interest for the aesthetic dimensions of teaching and learning (Boeckel, 2013; Davis & Tarrant, 2014; Eernstman & Wals, 2013; Lehtonen, Österlind & Viirret, 2020; Wall, Österlind & Fries, 2018a; 2018b).

For any new academic field, it takes some time before it finds its shape. In this case, labels like Environmental Education, Education for Sustainable Development, Education for Sustainability, and Environmental and Sustainability Education Research, tells us something about this search for core and boundaries – most likely to continue to be re-shaped and redefined as our understanding and the context constantly changes. As professor in Applied Drama, I see some parallels in how the two fields have evolved, indicating how applied drama research may contribute to ESE research, reflecting on its stage of maturation as a discipline.

Drama research is a fairly new academic field, at least in Sweden. It started with individual pioneers writing to document and reflect on their own practice. This was followed by advocacy studies, demonstrating the positive impacts of drama in education/applied drama, and exemplifying varying settings in which drama could be useful. Then, research shifted towards historical and curriculum aspects, studies based on documents rather than practice. Lately, we see a renewed focus on practice with more in-depth studies, precise questions, and fine-grained analyses. This is possible thanks to previous decades of descriptive studies and on-going praxis development, which provide a more solid point of departure and allow more qualified, problematising questions.

Research on educational drama connected to ESE includes several significant studies, often carefully designed, sometimes with the researcher responsible for the teaching intervention, sometimes including both teacher and student perspectives (e.g. McNaughton 2006, 2014), and often reporting highly positive outcomes (Österlind, 2020). This is fairly similar to the first phases of drama research as described above. Such studies are valuable as they give concrete examples of the potential for Drama in ESE. But such studies are also limited, for instance they are often designed as single case studies, based on a highly committed expert drama teacher, and more or less extra-ordinary teaching events.

Efforts have been made to overcome these limitations. As a way forward, comparative studies have been conducted (e.g. Ballantyne & Packer, 2009). Such efforts to synthesise existing knowledge are also valuable contributions to the field, of course. But comparative (meta-) studies are inevitably not detailed enough to inform teaching practice other than on a very general level (e.g. role-play *vs* excursions, Cruickshank & Fenner, 2012). Unfortunately, this can also be true for single case studies – the description of teaching interventions are usually not detailed enough to

serve as a foundation for researchers or practitioners who want to apply the same design. This short-coming is crucial, as teachers explicitly and repeatedly have asked for strategies, methods and models for ESE, which leads to the following questions:

- How can ESE research respond to the urgent call for 'methods' from teachers at all levels?
- How to research and teach for sustainability, without becoming simplistic or instrumental?
- How to provide useful empirical knowledge on ESE (without writing a teacher's handbook)?
- Can tacit, embodied drama knowledge be transmitted only by workshop interaction?

In fact, such questions are valid for educational research in all subject areas, but for many reasons it seems to be a really burning issue for teachers when it comes to ESE. So the question of 'how to teach' is crucial, but the answers are still tentative. For instance, research on drama workshops as single events in Higher Education (HE) for sustainability, based on students in Athens, Helsinki and Stockholm, shows that the timing, *when* the workshop is given in terms of the students' previous level of academic studies, have a surprisingly large impact on the students' learning experiences (Österlind, 2022 in press). In this contribution, I will reflect on my current work to address these issues in two projects.

Role-play is a well-known educational format, and a fairly common concept in research on ESE, at least in HE (e.g. Blanchard & Buchs, 2015; Chen & Martin, 2015). But a closer look reveals that 'role-play' is a wide concept, and usually not explicitly defined in the research literature (Österlind, 2018). Thus, I'm working on mapping various designs of role-play, as they appear in ESE studies in HE, in order to increase clarity and provide a basis for more informed choices about the purpose and design.

Applied or educational drama are also wide concepts, not precise enough to offer specific knowledge about what works, why, or how to do it. To further research on the potential of drama in ESE we are running an interactive workshop series to share and compare various drama genres (e.g. Forum Play, Legislative Theatre, Performance, Process Drama, Role-play). We will assess the applicability for non-drama teachers, teaching for Sustainability in Higher Education, and also the students' learning experiences.

The well-known gap between educational research and practice raises persistently recurring questions. What is the role and potential of research in ESE – and when is it no longer research? Is educational research more or less reflecting a development that has already taken place in praxis? I look forward to discuss how research on applied drama may contribute to develop teaching practice in ESE, beyond reports of single cases.

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Environmental Education Research as Ecological Praxis: Ecophenomenological (De)Constructions of a 'World in/of Crisis'

Cae Rodrigues

This essay proposal on the challenges for environmental education research (EER) in times of crisis, with special attention to the boundaries between EER research and practice, is built upon the following arguments: (a) 'Crisis' is a state of social anomaly where normality, or stability, as the reasonably unquestioned state of affairs, is challenged (even if provisionally or contingently) by change, both in physical and symbolic structures (e.g. Rodrigues; Lowan-Trudeau, 2021); (b) Crises, as collective representations, become more common, or probable, in face of the 'change paradox': on one hand, the growing idea (especially in the context described by Bauman as the 'liquid modernity') that change is needed as a means of personal and collective development; on the other, individual and collective ontological limits to change; (c) The (under- represented) praxis of human-nature inter-actions as an ecological and ludic experience (ecomotricity), with special attention to the complex nature of change, can favor resilience in times of crisis; (d) EER with a focus on the praxis of ecomotricity (also under-represented) is, in its theoretical essence and experiential practice, ecopedagogical (Rodrigues 2018; 2019) , and can be specifically designed with an emphasis on resilience in times of crises.

In the introduction to The Journal of Environmental Education's 2021 special issue on 'Revisiting justice in environmental and sustainability education: What pandemics (can) reveal about the politics of global environmental issues', Rodrigues and Lowan-Trudeau argue how, in times of crisis, individuals, private enterprises, and bodies of government promote changes that: (a) cause distress in the social dynamics of the everyday, challenging the tissue of social cohesion; and (b) unveil what is primarily and urgently important to a particular society, especially reflected in the (micro and macro) politics for managing the crisis, and in emerging, or resulting, social representations. On this basis, the authors raise a question that speaks to the relevant issue of how adequate current responses from EE(R) are to environmental challenges: Looking at the specific politics and the social representations (including academic research) that emerge in times of crisis, how do these answer to the question of 'What is in it for nature?'. This broader question leads to a series of relevant issues with direct relation to the environmental effects of social crises, or structural (physical; symbolic) consequences of social crisis in/for the environment. Looking at the climate crisis, for example: How do aesthetic- ethical-political representations of nature change as a result of the climate crisis? How do collective actions that respond to the climate crisis influence our relationship with nature? What should be expected from environmental education (EE) as a response to the climate crisis? How can EE theoreticians and practitioners incorporate the climate crisis into their praxis to make EE more relevant to today's world? How does experiential learning and interdisciplinarity benefit, or be limited by, the climate crisis? These are only a few examples among a diverse array of potentially relevant questions that could be asked in the described context.

Environmental issues directly related to social crises need to be increasingly acknowledged in a world where crises are, and will become, more common. In great part, this is the result of the 'change paradox'. In one hand, well established collective representations, or sociocultural norms and values (especially in the moral spectrum), give way to a 'political economy of uncertainty' (Bauman, 1999), where access to knowledge, information, and opportunities are not met with the needed normative tools for their management (Bluhdorn, 2011). As a greater

wealth of knowledge, information, and opportunity pushes the individual towards constant change for continuous personal growth, liquid identities become more suitable to a liquid life (Bauman, 2005) in liquid modernity (Bauman, 2000). On the other hand, ontological limits to change, well described by Brian Fay's 'Critical Social Science' (1987), remains to be a key point in the understanding of why change, as a praxical experience, is so difficult. The conflicts that emerge from this paradox, where we are constantly driven to change, but can hardly manage actual change, serve as the foundation of a world in crisis, or even a world of crisis. Dealing with changes imposed, or at least projected by crises becomes, thus, a relevant knowledge.

Among the growingly rich array of ecophenomenological designs that focus on the praxis of human-nature interactions (e.g., Ingold's 'phenomenology of the body' [2000; 2011]; Brown & Toadvine's 'eco-phenomenology' [2003]; Maxine Sheets- Johnstone's 'corporeal turn' [2009]; Gallagher's 'intercorporeality' [2016]), the ecopedagogical concept of 'ecomotricity' embraces the living and moving body in ecological and ludic inter-action with nature (human-and-other-than-human) (Rodrigues 2018; 2019). The ecological (ecosomaesthetic-environmentally ethical-ecopolitical) nature of ecomotricity, commonly experienced as 'corporeal dissonances' of phenomenological deconstructions in situ (Payne, 2014), carries a prospective to responding, ecopedagogically, to the limits to change. The ludic nature of ecomotricity, where pleasure or joy/happiness gives (affective/perceptual; physical/sensory) meaning to the lived experience, favors the empowerment of knowledge learned in voluntary praxis. Both these contexts are highly relevant in defining ecomotricity experiences as potentially pedagogical in understanding the commonly lacking knowledge of the complex nature of change, favoring resilience in times of crisis.

As methodological framework, ecomotricity is developed through eight coordinated and interconnected procedures, each with appropriately designed aims, instruments, and analytical methods to examine 'ways of moving' with nature (Rodrigues et al., 2017; Rodrigues 2018). Following the phenomenological sine qua non of 'going to the thing itself', the methodological procedures are developed through field research, aiming to learn from individuals that engage in ecomotricity experiences regularly—at least once a week in the last two years, or more. One of the promising (empirical, theoretical, methodological) outcomes of the long (duration), intense (frequency), and active (participation) involvement, or immersion, in the ethnographic and ecophenomenological research is a built 'correlation' between researcher and researched. Another promising outcome are self-critical analyses that tend to only happen in experiences that involve time and immersion. Thus, the research itself embodies an ecopedagogical inclination as participants phenomenologically memory their experiences in suspension and question reflexive ways of being-in-the-world, contrasting these memories and raised questions with their aesthetic-ethical-political assumptions and aspirations (Rodrigues, 2018). This critical ecopedagogical engagement/immersion is key to the potential deconstruction of a world in/of crisis, as the complex nature of change is inherent to ecological praxis. Conceptual, methodological, and pedagogical under- representation of ecological praxis, especially in contexts of emergence from the Global South, is still a major challenge. This proposal aims to foster academic dialogue about this challenge with the help of empirical evidence from diversified theoretical and practical research in Brazil and abroad.

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Bridging Boundaries Between ESE and Science Education Research and Practice through Collaborative Learning for Climate Justice

Emily Diane Sprowls

To address global issues of climate change and environmental injustices, Environmental and Sustainability Education (ESE) research and practice alike seek to facilitate learning for social and environmental change in collaboration with students, teachers, and scientists. Collaborative change for climate justice requires disrupting enduring hierarchical, Western educational approaches that silo research in academic disciplines and reinforce teacher-driven practices. To dismantle structural barriers to sustainable and just ESE, youth-driven, collaborative learning can allow for transdisciplinary, emancipatory co-construction of knowledge (Wals, 2020). How might we foster such collaborative learning that strengthens the bridges between our research and practice of ESE in pursuit of climate justice?

The researcher/practitioner divide is mirrored by the social boundaries between teachers/students and adults/youth. These boundaries reflect disciplinary divides between environmental scientists and education researchers, and echo between the fields of ESE and science education. Bridging these boundaries through reciprocal, collaborative learning among students, scientists, teachers, and researchers has potential to act as a lever for transformative education and environmental, justice-oriented action (Abson et al., 2017). Therefore, exploring how we engage collaborative, transdisciplinary learning in ESE research can open in-between spaces for teachers, scientists, and youth to design and mobilize research into practices that support climate justice (Van Poeck et al., 2020). I propose that crossing disciplinary boundaries to explore methodologies of justice-oriented research and collaborative learning practices in science education might not only help ESE bridge the research-practice divide, but also restructure bridges among teachers-students and educators-scientists to build towards climate justice.

At the nexus of social justice and climate change, *climate justice* links ideas of social equity, anti-racism, and decolonization with the ethical implications of the climate crisis (Robinson & Shine, 2018). Research that centers student voices in collaborative inquiry amplifies youth agency in taking on the intersecting issues of climate change and social justice (Barton & Tan, 2010). To respond to demands voiced by youth activists (e.g., #SchoolStrike4Climate), and to face the challenges of moving from theory to practice, crossing social and academic boundaries through collaborative methods can bridge to new ways forward towards climate justice.

This essay explores how ideas about justice-oriented, collaborative learning in the spaces between science, environmental and sustainability education can shape (or constrain) our research methodologies in ESE. I suggest that methods might emerge towards just, sustainable, and collaborative practice *and* research of ESE from cultivating collaborations in such in-between spaces. Drawing from research in informal science education and science teacher education, as well as from my own experiences as an ESE researcher, teacher educator, classroom teacher, and informal science educator, I contend that we might learn from how these disparate fields theorize and implement justice-oriented collaborations. I wonder how such learning might contribute to climate justice?

This inquiry of justice-oriented perspectives in ESE and science education informs both my own research methodology and my pedagogical praxis in my ongoing study of teacher education towards climate justice. As an instructor of university courses in ESE and science education, my position at the practice-research boundary offers opportunities to pilot approaches to collaborative learning for climate justice in spaces in between the community and university, and in between formal school science and participatory science collaborations outside of school. Facilitating student-led science clubs as in-between educational spaces has opened up pathways to learn through research and practice of ESE collaboratively with children and university students. Through the university's science mentorship and community engagement programs, possibilities emerge to involve pre-service teachers and scientists-in-training in transdisciplinary collaboration with youth and community partners working towards climate justice.

Transdisciplinary collaboration has been an important focus in sustainability sciences (Chambers et al., 2021), and ESE scholarship has similarly engaged in research across fields (Lotz-Sisitka et al., 2015). However, the intersecting disciplines of ESE and science education research do not necessarily build from the same theoretical or methodological traditions, leaving gaps in whose ideas are represented and how we address environmental injustices (Busch et al., 2019). Nevertheless, there are rich areas of overlap in ways that educational research has engaged youth, teachers, and scientists in justice-oriented research (Wals et al., 2014). Tracing parallels across the fields of ESE and science education outlines methodologies for collaborative learning with youth, teachers, and scientists about climate justice. Justice-oriented, collaborative methods offer productive places of intersection between research, practice, knowledge mobilization, youth agency and climate action.

The processes of *collaborative learning* describes shared, reciprocal, social learning among students, teachers, peers, and youth, based on critical theories of sociocultural and situated learning (Holland et al., 1998; Lave & Wenger, 1991). ESE researchers have elaborated these foundational learning theories to integrate conceptualizations of collaborative learning and environment (e.g., transformative sustainability learning (Sipos et al., 2008), transgressive learning (Lotz-Sisitka et al., 2016), human/ environment/ more-than-human interactions (Bang & Marin, 2015), and childhoodnature (Malone et al., 2020)). These ESE perspectives underscore the importance of the multiplicity of perspectives generated by collaborative learning and teaching. They also highlight the significance of collaborative learning for climate justice education by connecting educational theories of learning as change with issues of socio-ecological change.

Research in science education has likewise extended sociocultural theories of learning to conceptualize collaborative, student-driven learning as youth-led inquiry (Windschitl et al., 2011), and to address questions about equity, social justice and youth agency (Schenkel et al., 2019). Sharing roots with ESE in critical pedagogy (Freire, 1970), critical science education research offers much to draw on for examining justice-oriented and democratic teaching practices (Basu & Barton, 2010; Bazzul & Tolbert, 2019; Rivera Maulucci, 2012). These pedagogical framings prompt important considerations of justice-oriented research, as until recently, traditional Western approaches to environmental education research have not been critical of assumptions about race (Stapleton, 2020) or settler-colonialism (Datta, 2018; Nxumalo & Cedillo, 2017). The critical theoretical perspectives informing science education research offer decolonial, anti-racist methodologies that ESE ought to develop further to expand our research of collaborative environmental action and social justice (Drewes, 2020; O'Brien et al., 2018).

Research in science education that examines collaborative learning through a justice-focused lens helps anchor our discussion of ESE at the intersecting boundaries of research/practice, science/education and teacher/student. Models of justice-centered science pedagogy (Morales-Doyle, 2017) position students as agents of environmental and social change, and transformative sustainability learning theory frames research with youth in climate action (Trott, 2019). The justice-orientation of these cases counterbalances methodologies that focus on teacher training, environmental conservation, or science content as learning outcomes (Derr & Simons, 2020). The interconnected critical framings of justice in science education research inform our analysis of how collaborations position students, researchers, teachers, or scientists in contexts of ESE learning and research, and can help us focus on environmentally and socially just education in times of climate change.

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'Through their Eyes and Ears': Creating New Knowledge for Climate Education through Co-productive Practices

Sara-Jayne Williams & Rosamund Portus

Despite climate change being a well-established fact, public perception of the current climate situation as being an emergency is a relatively recent phenomenon. O'Neill and Nicholson-Cole (2009, p.361) wrote of the tendency to see climate change as "an impersonal and distant issue". Yet, as is made evident through both extensive research and the increase in movements such as Extinction Rebellion and Fridays for Futures, public discourse around climate change is shifting towards understanding it as a crisis that is occurring in the *here* and *now* (Flynn et al., 2021). The increased visibility of climate issues has caused feelings of eco-anxiety, grief, and helplessness, particularly in young people, to become an ever-more common experience (Hickman, 2020).

The JPI-Solstice funded 'Challenging the Climate Crisis: Children's Agency to Tackle Policy Underpinned by Learning for Transformation' ([CCC-Catapult], 2021) research project was developed in direct recognition that young people's lives are being rapidly redefined by environmental crises. Inspired by widely-established knowledge that education is a critical (but not the only) tool for developing young people's resilience (Clark, Heimlich, Ardoin, and Braus, 2020), the project is focused on producing research-informed recommendations for climate education which are genuinely responsive to the experiences of young people today. To produce these recommendations the three-year research project working across Bristol (UK), Galway (Ireland), Genova (Italy) and Tampere (Finland), is exploring how young people are making sense of their lives, and what tools they need to develop agency and resilience, in connection with climate complexity.

During the development of CCC-Catapult, a critical consideration was how to ensure that the outputs of the project would be meaningful for both young people, and those who shape their experiences. This challenge affects many researchers (and practitioners) and resonates across wider educational research, which is often driven by people who are distinct from those who their research seeks to impact (Lundy and McEvoy, 2009; Brydon-Miller and Maguire, 2009; Smillie and Newton, 2020; Neenan, Roche and Bell, 2021). The challenge lies in how to direct the objectives and outcomes of research so that it legitimately tackles issues which resonate with proposed target groups. In order to incorporate young people's voices into the knowledge creation process, and ensure that the research would be relevant to young people's *actual* experiences and concerns, the CCC-Catapult research team decided to pursue a co-productive methodology: working directly *with* and *for* young people by recognising young people as the experts in their own lives, with agency and ability to co- develop the direction of the research through their eyes and ears. This article speaks to some early reflections on engaging with this co-productive methodology.

Co-productive research is a process in which "researchers, practitioners and the public work together, sharing power and responsibility from the start to the end of the project, including the generation of knowledge" (Hickey et al., 2018, p. 4). Through disrupting traditional researcher- participant relationships, recognising the value of different forms of knowledge, and emphasising the need for transparent outcomes, the co-productive approach seeks to produce research that is genuinely relevant to the needs of the target group (Pavarini, Lorimer, Manzini, Goundrey-Smith, and Singh, 2018). By engaging with co-production, CCC-Catapult is moving away from understanding young

people as passive 'subjects' of the research process. Rather, young people are actively involved with the development of the research, influencing project outcomes and increasing impact.

As a result of our intention to meaningfully include young people as co-producers on the CCC- Catapult project, 'Youth Action Partnership' (YAP) groups have been set up in each country location. These are groups of 15–18-year-olds who guide project decision-making by sharing their perspectives as experts on the experiences of young people. To ensure that YAP members have regular opportunities to feedback on the research process they meet with team researchers once a month. Inclusivity guided the YAP recruitment process, with researchers advertising the opportunity through schools, charities, and social media. At the time of writing this, in February 2022, YAP members have been working with researchers for approximately seven months. In this paper we are reflecting specifically on our experiences of working with young people in Bristol, UK.

In any research project, co-production adds a significant other dimension to the research process. Hickey et al. (2018, pp. 7-8) outline five key principles of co-production. These focus on the sharing of responsibility, the inclusion of all voices, the respecting of all involved individuals, the need for the process to be reciprocal, and the need for everyone in the group to trust in the process. Consequently, to ensure that the co-production process is indeed grounded in principles of inclusion, equality, and reciprocity (Pavarini et al., 2018), researchers must spend a substantial amount of time thinking through, organising, and engaging with this process. However, our work with young people as co-producers has shown the need for researchers to think 'above and beyond' the principles of co-production outlined by Hickey et al. (2018). We have begun to consider the need for additional principles of co-production (with young people but maybe more widely), to ensure the process has every chance of being successful. The first of these suggested additional principles centres around empowerment. Working with younger people as co-producers brings into focus key questions regarding researcher power and control, and the positioning of both requires careful consideration. Space and time must therefore be given to developing young people's trust in their role as co-producers and equal partners. In addition to bringing careful attention to the power dynamics in the room, we also considered the training needs of YAP members: without the relevant knowledge and tools to understand the requirements of a university-led research project, YAP members capacity to confidently steer the project may remain limited. The second suggested principle is creating opportunity. This recognises that engagement is encouraged if the process is complemented by other, unique opportunities. In recognition of this, we are offering young people opportunities to meet with their international counter-parts, university-led training experiences, and the chance to co-organise public-facing climate events.

Youth-focused co-production is by no means an easy undertaking, and certainly not one which can be 'tacked' onto a research project. Achieving best practice, which requires researchers to ultimately break down traditional power dynamics while simultaneously nurturing young people to guide the process, is an aspiration which requires substantial and ongoing reflection to achieve. In the context of climate education research, working co-productively offers the opportunity to incorporate young people in the development of educational toolkits that genuinely respond to the challenges faced by young people living in a time of climate crisis. As we have seen through the CCC-Catapult project, co- production can provide that critical window into the lives of those who we hope to positively influence through education. For the CCC-Catapult project, this will help ensure that the knowledge and

recommendations developed will genuinely progress climate education so that it responds to the needs, concerns, and fears of young people today.

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I have a background in international development, with over two decades of field experience in South Asia, specialising in educational development and policy, youth activism and environmental and social justice education. I moved to the UK and joined academia about six years ago. I teach modules on human rights education, sustainability education, critical pedagogy, social politics and critical thinking. My academic research interests lie in two areas. One, the sociology and political economy of policy and delivery in international development in the postcolonial context. I am currently working on a postcolonial history of the political economy of education in Pakistan in the first two decades after independence. Two, I am interested in how environmental and social justice issues can be effectively delivered in higher education, and how this might connect to different forms of youth and student activism.

Sule Alici

Kirsehir Ahi Evran University, Turkey
Early Childhood Education

Dr. Alici was awarded her PhD degree ESD in early childhood education at Middle East Technical University in 2018. She is currently working as a lecturer in the Elementary and Early Childhood Education Department at Kirsehir Ahi Evran University in Turkey. She has been a creative drama leader since 2016. She is both co-convenor and social media coordinator of sustainability SIG of the European Early Childhood Education Research Association. Her research areas include EfS in ECE, Critical/Media Literacy in ECE, Creative Drama in ECE and Teacher Education in EfS.

Juliette Clara Bertoldo

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My background is firmly located in the arts: after obtaining a BA in Dance at the Rotterdam Dance Academy in 2011, I studied documentary filmmaking and worked as a videographer for several contemporary art institutions until this day. In parallel to my artistic practices, I graduated with an MSc in Educational Studies at the University of Glasgow (with Distinction), and in 2019, was awarded a Graduate Teaching Studentship at Maynooth University, where I began my doctoral studies, supervised by Prof. Sharon Todd. My academic interests are interdisciplinary in nature and currently orbit around Death Studies, Posthuman theory, Philosophy of Education, Environmental Philosophy, Environment and Sustainability Education, and arts-based methodologies.

Sean Blenkinsop

Simon Fraser University, Vancouver, Canada
Education

Sean is a professor in the faculty of education at Simon Fraser University in Vancouver, Canada. He has a long background in outdoor, environmental, and experiential education and has spent thousands of days "on the trail." He is trained as a philosopher of education with a focus on existentialism and the environment and has a doctorate from Harvard therein. For the last ten years Sean has been involved in creating, advocating for, and researching 3 "eco-schools." All three are public schools in the province of BC and all three understand themselves to be working alongside the more-than-human and the local Indigenous Nations towards a more eco-socially just culture. This is a cultural change project. There have been a lot of publications from this research and, mostly recently, there is a research methodology book due to appear shortly with Peter Lang called: Ecoportraiture: the art of research when nature matters. Sean has also been deeply involved in pedagogical discussion called Wild Pedagogies.

Monica Carlsson

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My research is mainly drawing on curriculum theory and education policy theory. It is focusing on exploring different understandings of purposes and values in schooling, as well as issues related to democratic and political formation, action competence, participation, wellbeing, learning, and evaluation of teaching and learning, all within the related fields of environmental and sustainability education and health and wellbeing education in schools.

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Petra Cremers is a researcher of education and learning aimed at advancing societal transitions. Her PhD-research on the design of hybrid learning environments at the interface between school and workplace was the foundation for her current research into transformative and transgressive learning for sustainability. Topics of special interest are: Futures Literacy as a capability of anticipation in complex contexts, arts-based methods for eliciting ways of knowing and understanding beyond the cognitive, and identity work to support transformative learning and emotional and existential challenges that are inherent to transitional change.

Petra is a lecturer of the training programme Action Research meets Design Research, for practice-based researchers, a coproduction of five Dutch universities.

Keri Facer

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I have been working for the last 20 or so years on the relationship between education and 'the future'. This has meant studying learning across schools, universities and in cities in relation to transformational changes related variously to technological disruption, social and economic disruption and, of course, environmental disruption. My work is both theoretical - examining the question of how 'the future/s' play a role in the framing of educational purpose, exploring how time and temporality shape methods in this field - and deeply practical, facilitating collaborative research relationships between community groups, educators, designers, artists. I have worked a lot at international levels, particularly with UNESCO supporting their Futures of Education Commission and Futures Literacy work, at national levels, developing long term foresight programmes for the UK government - but am drawn to grassroots collaboration as a key site of educational change. In the last three years I have focused specifically on two things - the implications of climate change for universities, proposing the need to conceptualise this as a civilisational shift rather than a technical problem; and the role of temporality in both educational and research processes.

Michelle Hiestermann

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Michelle Hiestermann manages the implementation of the social learning and knowledge management component of the Ecological Infrastructure for Water Security Project at the Water Research Commission. This Global Environment Facility funded project is focused on unlocking biodiversity benefits through development finance in the critical catchments of the Berg Breede and Greater uMngeni in South Africa. She previously managed a Water Stewardship Partnership collaboration of business, government and civil society to address water security challenges in the uMhlathuze catchment in KwaZulu-Natal. Michelle has experience in the South African water and environmental sectors in developing training and learning materials, convening social learning spaces and communities of practice, research, monitoring and evaluation and mentoring young professionals. The latter inspired her PhD research which offers a social realist analysis of mentoring as social learning value creation in two South African environmental organisations. She is a GreenMatter Fellow.

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Murod Ismailov, Ph.D. is an assistant professor of science communication at the University of Tsukuba, Japan. Murod's research interests are interdisciplinary and include both substantive and methodological areas, organized into three clusters: (1) Media and Technology for Learning; (2) Instruction-Motivation-Engagement, and (3) Sustainability and Climate Change Education. Murod is an Associate Editor of Frontiers in Psychology (Section: Educational Psychology) and a member of editorial boards of several international journals.

Lise Janssens

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Lise Janssens is a PhD student from Hasselt University. Her Phd career started in May 2020. Before she was a staff member of education at Hasselt University and she worked as a researcher on applied educational research projects. She has a background in business economics and followed a teacher training in 2018. Her research interests focus on transformative learning for sustainability education and research related to how integrate sustainability in the economics curriculum.

Nanna Jordt Jørgensen

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Nanna Jordt Jørgensen is a social anthropologist, PhD in Education for Sustainable Development, and currently holds a position as associate professor at the University College UCC in Copenhagen. Her research interests revolve around the agency of children, young people and their families in relation to education, sustainability, immigration

and social inequality, and around relations and collaborations between academia, civil society and state actors. She has carried out research in Southern and Eastern Africa, and in Denmark.

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Universidade Federal do Triângulo Mineiro, Uberaba, Brasil
Departamento de Educação em Ciências, Matemática e Tecnologias (DECMT)

My undergraduate studies were in Biology with a Teaching Certification, and then proceeded to my Master's studies in Science Education (FE-USP). My PhD studies were in Education, carried out at the UNESP (2014) by developing research on Environmental Education in Brazil. Since the years 2016, I have also taught and supervised master's and doctoral studies (2021) on Environmental Education, Science Education and Popular Education in a Graduate Program in Education at the UFTM and State Univesity of São Paulo (UNESP).
At the University, since 2014, I have engaged in different academic activities, mainly (1) organizing of a series of Environmental Education Research Meetings that have been carried out in Brazil since 2001;
(2) editing the Brazilian Journal on Popular Education; (3) coordinating a research project which the main objective is to work with an intercultural approach in the training of science teachers and in state-of-the-art studies in Environmental Education in Brazil. (4) At graduation, I work with people from the rural territories (rural education) in a degree focused on the training of science teachers.

Oleksandra Khalaim

Uppsala University, Sweden
Sustainability Learning and Research Centre (SWEDESD)

Oleksandra Khalaim, Ph.D., is graduated in Economics (2006), master's degree in Economics (2007), master's degree in Environmental Sciences (2010), and Ph.D. in Ecology and Environmental Sciences (2017). She got university teaching experience in Ecology and Sustainable Development study courses for 6 years in Ukraine and Sweden. Her current research interests include education for sustainable development, climate change education and transformative learning methods in higher education, climate change adaptation, and management of urban green areas. Oleksandra has been conducting a line of post-doctoral research since September 2019 at SWEDESD. Currently, she is undertaking post-doctoral research on climate and mental health among staff and students at Uppsala University Campus Gotland.

Nicholas Mwaura Kinyanjui

Riara University, Nairobi, Kenya
Students Life

Nicholas Mwaura Kinyanjui is the Dean of Students and Director Quality Assurance at Riara University. Nicholas has a proven track record in Education for Sustainable Development research and training; Graduate Employability research and training and is the immediate global winner of the most innovative idea in enhancing graduate employability competition by the African Centre for Career Enhancement and Skills Support (ACCESS-Leipzig University Germany); solid practitioner in educational leadership, teaching, alumni relations, quality assurance,

and resource mobilization spanning for over 15 years in learning institutions. He has trained widely and presented on ESD, graduate employability, institutional advancement, alumni relations, research, and resource mobilization. Mr. Kinyanjui is a doctoral candidate at the University of Vechta, Germany, holds a Master of Education Administration and Planning and a Bachelor of Education in English and Literature in English from the Catholic University of Eastern Africa (CUEA).

Ole Andreas Kvamme

University of Oslo, Norway
Department of Teacher Education and School Research

In my work I explore the ethical-political dimension of environmental and sustainability education, and include perspectives from critical cosmopolitanism, critical Bildung and environmental ethics. I have been particularly interested in the mediations between cosmopolitan values and specific contexts. Other issues of interest are the historical situatedness for education, education in the Anthropocene, critical pedagogy of place, and justice and education. I am engaged in religious/worldview education, focusing on the significance of diversity in pluralistic societies and existential issues. Finally, as a student teacher educator I am teaching professional ethics.
As a researcher I am empirically oriented, doing reflexive, qualitative research, studying how environmental and sustainability education is articulated in various contexts, including curriculum reform, classroom interactions, and even informal institutional settings, like the school strikes for the climate. I also work theoretically, identifying, elaborating on and reconsidering vital problems and debates within the field of environmental and sustainability education.

Gavin McCrory

Chalmers University of Technology, Gothenburg, Sweden
Department of Space, Earth and the Environment

Gavin McCrory is a Doctoral Candidate at Chalmers University of Technology. Gavin's PhD topic is the role of sustainability-oriented labs in catalyzing transformations towards sustainability. Since 2018, he has co-designed, educated in, and investigated Challenge-Lab (C-Lab), an embedded learning environment in West Sweden. C-Lab adopts a principles-based backcasting as a meta-methodology for engaging with desirable sustainable futures in transdisciplinary settings. Gavin focuses on an action-oriented, dialogic, and reflexive research approach that recognizes the intertwined role that education can play in fostering transdisciplinary learning. As an 'undisciplinary' scholar, Gavin's research interests include the performative nature of pasts, presents and futures in educational learning spaces. In addition, he is interested in how education and research can be aligned so that students, educators, and stakeholders can learn collectively about, and respond to, complex sustainability challenges.

Jutta Nikel

University of Education Freiburg, Germany
Educational Science / Erziehungswissenschaft

I am a senior lecturer and research fellow on school improvement, ESE and educational governance. I gained my Ph.D. from the University of Bath and have worked there for several years as Post Doc. Since 2009 I am at the University of Education in Freiburg working on several national and international project. From 2016 to 2018 I acted as link convenor for the EERA network 30.

Marianne Ødegaard

University of Oslo, Norway
Dept. of Teacher Education and School Development

Marianne Ødegaard is a professor of Science Education at the Department of Teacher Education and School Research at the University of Oslo, Norway. Her research interests are inquiry-based science, sustainability (socio-scientific issues), use of drama in science and literacy in science. She has recently lead the research group COSER (Challenges of Sustainability in Educational Research) She has been the principle investigator of several research projects. The latest was Linking Instruction in Science and Student Impact (LISSI) – a video study of inquiry based science in science classrooms. Ødegaard started her career as a teacher in biology, chemistry, science, math and drama.

Lausanne Olvitt

Rhodes University, Makhanda, South Africa
Environmental Learning Research Centre

I am an Associate Professor in the Environmental Learning Research Centre at Rhodes University, South Africa. This year marks my 20th year in the field of EE/ESE/ESD, having commenced a Masters in EE in 2002. My main research interests include the affective aspects of environmental learning and the development of moral agency. My work is mostly situated in the post-Vygotskian scholarship of Cultural-Historical Activity Theory and underlaboured by critical realism. These interests are currently entangled in concerns for local community-based learning in Makhanda related to sustainable food systems, hunger and food security. I currently co-ordinate the Masters Programme in Environmental Education, teach an educational philosophy thread in the BEd Honours programme, lead investigator in a research project on Early Childhood Development (ECD) centres' potential to be hubs of learning about growing food in communities experiencing socio-economic and social-ecological (dis)stress, and I am the incoming editor of the Southern African Journal of Environmental Education.

Eva Österlind

Stockholm University, Sweden
Department of Teaching and Learning

I teach Drama in Teacher Education, lead a Master program in Drama and Applied Theatre, and tutor PhD-students. My research focus on the potential of Drama for Learning, especially Drama in Education for Sustainability in HE. Lately, I have been working with a project based on drama workshops given to University students in Athens, Helsinki and Stockholm. I have also organised drama workshops for University teachers, both international and swedish academics, to provide an experience of drama work related to this value loaded and challenging subject.

At the moment I try to clarify the general concept of Role-play, and plan for two international, explorative workshops, in order to compare several drama genres regarding their applicability in Higher Education for Sustainability.

Sophie Perry

King's College London, UK
School of Education, Communication and Society

Sophie is a PhD student at King's College London funded by LISS DTP and the Rosalind Driver Scholarship. Her research explores how environmental education experiences are developed, delivered and experienced through 3 qualitative case studies. Previously, Sophie has worked in non-formal science education at Guerilla Science, 1001 Inventions, and Science Gallery Dublin at Trinity College Dublin. Outside of her PhD, Sophie designs and produces non-formal environmental workshops, events and festivals and is a member of Science London, a collaborative organisation dedicated to embedding equity and justice in science and science communication.

Charlotte Ponzelar

Uppsala University, Sweden
Department of Education

Charlotte Ponzelar is a PhD candidate in the Department of Education at Uppsala University in Sweden. Her research is situated in the research field of sustainability in higher education and didactics. She is currently exploring the concept of 'care' and its fundamental meaning in relationship building within problem-based teaching and learning. Her general interest in relationships that are built in educational institutions and the agency of the students in particular was inspired by her work as a course coordinator of the course "Reimagining Education" at CEMUS (joint center Uppsala University and Swedish University of Agricultural Sciences). Reflections on the course led to the insight that a learning environment was built together through relationships based on care, respect, reciprocity, listening and dialogue. More insights into her work can be read in the newly published article under the title "'Student-led education for a better world?' Reflections in conversation" in Högre Utbildning.

Nadia Raphael Rathje

Aarhus University, Denmark
School of Education, Education Science

Originally, I graduated with a degree in Danish and Art history from the University of Copenhagen. In my further work as a teacher of Danish as a second language for adults, I developed an interest in pedagogy, didactics and alternative forms of teaching. This led me to teacher training, where I was an associate professor for a number of

years. Doing this, I became interested in school development, sustainability challenges and possible ways of working with alternative school development. This, in turn, made me co-found a green free school in Copenhagen, for which I became headmaster during the school's first five years.

I applied for a PhD because I wanted more academic knowledge in the field and hoped to help shape the development through my mix of practical and theoretical approach. My PhD has the working title 'Education for sustainable development in school practice', and I focus, among other things, on whole-school approaches in a critical perspective (Lotz-Sisitka et al., 2015, Mathar, 2013, Wals & Benavot, 2017) . I am now barely halfway through the programme.

Susanne Ress

Bamberg University, Germany
Chair of Foundations in Education

Susanne Ress (PhD) is a post-doc researcher at the Chair of Foundations in Education at Bamberg University. Her research combines theoretical insights from critical development studies, comparative and international education, critical black and ethnic studies, and post-foundational approaches to education, studying educational responses to global challenges from a majority world perspective. Her current work examines the two-way-relationship between climate change and environmental degradation (CCED) and education in diverse ecologies in Asia, Africa, Europe, and Latin America, including young people's everyday CCED experiences, how CCED shapes youth's ability to participate in schooling, and in what ways school-based learning about CCED maps on to these realities. Her writings on race, mobility, solidarity, and education for sustainable development have been published in Comparative Education Review (2018, 2022), Compare (2020), as monograph titled: Internationalization of Higher Education for Development: Blackness and Postcolonial Solidarity in Africa-Brazil Relations (2019, Bloomsbury), and in various edited volumes.

Cae Rodrigues

Federal University of Sergipe (UFS), Aracaju, Brazil
Physical Education

Adjunct Professor, Faculty of Physical Education, Federal University of Sergipe (UFS-Brazil). Professor/Researcher (Permanent Position), Postgraduate Program in Development and Environment (Masters and PhD Programs) (UFS-Brazil). PhD in Education in 2013 (UFSCar-Brazil, research financed by CNPq). Part of the PhD was undertaken in Monash University (Australia) under the supervision of Prof. Phillip G. Payne. Hosted as an Honorary Visiting Researcher for 8 months at La Trobe University (Victoria, Australia, 2018), and for four months at the University of Sunshine Coast (Queensland, Australia, 2019). Current Editor of Special Editions for The Journal of Environmental Education. Member of the Society of Qualitative Research in Human Motricity since 2005, acting as Vice-Director of Scientific Affairs (2007-2011; 2015-2019), Director of Scientific Affairs (2011-2015), Director of Events (2019-2021), and, currently, as Vice-President.

Claudia Ruitenberg

University of British Columbia, Vancouver, Canada
Educational Studies

Claudia Ruitenberg is a professor of philosophy of education in the Department of Educational Studies at the University of British Columbia. She is author of Unlocking the World: Education in an Ethic of Hospitality (2015) and editor of (among other titles) Reconceptualizing Study in Educational Discourse and Practice (Routledge, 2017). Other research interests include political education, ethics (including environmental ethics), translation, and speech act theory. She lives on Salt Spring Island and is currently studying permaculture.

Ann-Kathrin Schlieszus

Heidelberg University of Education, Germany

Ann-Kathrin Schlieszus works as an academic staff member at Heidelberg University of Education in a project called "How to teach sustainability – promotion of Education for Sustainable Development (ESD) in higher education". The project is affiliated to the Heidelberg Center of Education for Sustainable Development and aims at setting up professional development structures across higher education institutions with a focus on teacher training at selected higher education institutions in Germany. As a first-year doctoral student, she conducts research on the perspectives of higher education lecturers on normativity in the context of ESD. She studied geography, French and biology for the teaching profession at grammar schools at Heidelberg University, Germany. During her studies, she worked in different ESE projects with school and university students. Her research interests are focused on ESE, transformative learning processes, normativity, higher education didactics and pedagogy.

Emily Sprowls

McGill University, Montreal, Canada
Department of Integrated Studies in Education

My career in ESE has fluctuated between research and practice. I am a researcher in the doctoral program in the McGill Faculty of Education, and I am also a practitioner in science education, currently working as science teacher educator and a lab outreach coordinator at Université de Montréal. My early career work revolved around informal ESE with youth in Central and North America, in collaboration with environmental scientists to link local and global environmental issues. After earning my Masters of Environmental Science degree at Yale University, I taught environmental sciences in secondary schools. I learned alongside my students as a classroom science teacher at an alternative K-12 school, where student-driven pedagogy and learning communities were cornerstones of our practice. My experiences collaborating with youth, teachers, and scientists catalyzed my ESE research interests and continue to inform my practice of climate justice-oriented science education.

Saransh Sugandh

In Vaarta, Delhi, India

Saransh Sugandh has been working at the intersection of Media and Education for Sustainable Development for the past 12 years. He has been researching and adapting scientific findings and solutions (within the domain of sustainability) to develop context-specific IEC materials. His key areas of interest are Gender, Migration and non-

formal media-based educational interventions at the community level (rural and urban). He has worked with organisations such as UNESCO, GIZ, Centre for Environment Education, Engagement Global, The Energy and Resources Institute, J-PAL, Government of India and MGIEP-UNESCO. Currently he runs his own media research firm called In Vaarta.

Valentina Tassone

Wageningen University, the Netherlands
Education and Learning Sciences

I am deeply engaged with exploring educational and learning approaches that empower learners to respond to today's sustainability challenges. By drawing from the dilemmas people face and from the ecological needs of the earth, my research focuses on innovative educational design, pedagogies of care, and deep learning processes that transform people and practices and that enable learners to be responsible agents in our complex world. My research studies take place in the context of (higher) education, community setting or society at large, and often at their crossroads. I work as assistant professor at the Education and Learning Sciences, Wageningen University.

Sharon Todd

Maynooth University, Ireland
Education

Sharon Todd is Professor of Education and member of the Centre for Public Education and Pedagogy at Maynooth University, Ireland. She is author of Learning from the Other: Levinas, Psychoanalysis and Ethical Possibilities in Education (SUNY, 2003); Toward an Imperfect Education: Facing Humanity, Rethinking Cosmopolitanism (Paradigm, 2009); and The Touch of the Present: Educational Encounters, Aesthetics and the Politics of the Senses (SUNY, in press). Her current research focuses on the body and the environment and educational practices focused on aesthetics, sensibility and the climate crisis.

Linnea Urberg

Örebro University, Sweden
School of Humanities, Education and Social Sciences

Linnea is a PhD- student in education for sustainable development at Örebro University. Her research examines young people's resistance and didactic implications for Education for sustainable development. Linnea has a background as a teacher in civics and history, and now teaches at the teacher education program.

Laura van Oers

Utrecht University, the Netherlands
Copernicus Institute for Sustainable Development, Environmental Governance

Laura van Oers (1991) is a PhD candidate in the 'UNMAKING' research programme and part of the Copernicus Institute of Sustainable Development at Utrecht University (The Netherlands). UNMAKING (https://unmaking.sites.uu.nl/) aims to explore the unmaking of capitalism in societal transformations to

sustainability, and the role of grassroots action in such transformations.
Laura holds a master's degree in Innovation Sciences from Utrecht University. She is a qualified lecturer with teaching experience in the Bachelor's programmes Science and Innovation management and Global Sustainability Sciences . Laura is also actively involved in a variety of activist and civil society groups related to degrowth, food sovereignty and agroecology.

Koen Wessels

Utrecht University, the Netherlands
Sustainable Development

Koen Wessels is currently finalizing his PhD-dissertation at Utrecht University, circling the question of what a meaningful pedagogical response to students' entangledness in complex societal challenges might look like. Key concepts in his work are complexity thinking, entanglement, inquiry, diffraction, narrativity, relational awareness, hope, and integrity. Parallel to his research, Koen co-founded The Bildung Academy in 2015, for which he developed numerous experimental educational initiatives. As of the first of March 2022, Koen starts a new position as post-doc for the Urban Futures Studio at the department of Sustainable Development at Utrecht University. In this new position, he will closely collaborate with Jesse Hoffman, Peter Pelzer, Tine Beneker and Maarten Hajer to create novel educational experiments around the notions of 'futuring' and 'the mixed classroom' within the context of the climate crisis.

Danny Wildemeersch

KU Leuven, Belgium
Laboratory for Education and Society

Danny Wildemeersch is an emeritus professor of 'Social and Cultural Pedagogy' at the University of Leuven in Belgium (1986 – now). He also was a full professor of 'Social Pedagogy and Andragogy' at the University of Nijmegen in the Netherlands (1994-2002). He is connected to the the K.U. Leuven Laboratory for Education and Society. His research focuses on a variety of themes such as intercultural pedagogy, social learning and participation, citizenship education, sustainability education, participation in development co-operation. He has published widely on these issues. He is an editor of RELA (European Journal for Research on the Education and Learning of Adults) and of the advisory boards of 'Adult Education Quarterly' and 'Studies in Continuing Education'

Sara-Jayne Williams

University of the West of England, Bristol, UK
Geography and Environmental Management

Sara is a Senior Lecturer and Researcher at the University of the West of England, UWE, and with her background in (child) psychology and community development she pursues two main lines of inquiry within the field of environmental psychology: Young people's understanding of, and engagement with the challenges posed by

climate change and their ability to act as catalysts to environmental action and behaviour change within their families and communities. Sara leads a BSc Environmental Management degree and is also co-investigator on two research council funded projects; VIP-CLEAR (Voices in a Pandemic: Children's Lockdown Experiences Applied to Recovery) and CCC-Catapult.

Ronghui (Kevin) Zhou

University of Warwick, Coventry, UK
Department of Education Studies

Ronghui (Kevin) Zhou is a Ph.D. researcher within the Department of Education Studies at the University of Warwick. His doctoral research is jointly funded by the University of Warwick and the China Scholarship Council (CSC). His research topic is Education for Sustainable Development (ESD) in China, particularly within the context of primary education.

SEMINAR HOSTS & ORGANISATION COMMITTEE

The 15th Invitational Seminar on Environmental & Sustainability Education Research is organised by the Centre for Sustainable Development at Ghent University in collaboration with partners of the SEDwise network.

The Centre for Sustainable Development (Centrum voor Duurzame Ontwikkeling – CDO) is committed to multi- and transdisciplinary research on the social and political dimensions of environment and sustainability issues. Coordinated by the CDO, SEDwise ('Sustainability Education – Teaching and learning in the face of wicked socio-ecological problems') is an International Thematic Network with the aim to provide research-driven capacity-building on integrating sustainability in (university) education. Through this interdisciplinary network, Ghent University serves as a 'living lab' where innovative experiments with sustainability education are co-created and turned into case studies for ESE researchers who act as 'critical friends'.

Organisation committee consisting of SEDwise members

Katrien Van Poeck
Network Coordinator
Ghent University, Belgium
Uppsala University, Sweden

Nadine Deutzkens
Network Coordinator
Ghent University, Belgium

Maarten Deleye
Uppsala University, Sweden
Ghent University, Belgium

Jeppe Læssøe
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Johanna Lönngren
Umeå University, Sweden

Heila Lotz-Sisitka
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Support team consisting of Ghent University researchers

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